

HIGHLY CONFIDENTIAL
FINAL DRAFT
OF THE
BRITISH PHARMACOPŒIA
1914

TO BE CORRECTED (IF NECESSARY)
AND RETURNED
TO THE REGISTRAR,
GENERAL MEDICAL COUNCIL
299 OXFORD STREET LONDON, W.
NOT LATER THAN



22503523381

THE
BRITISH PHARMACOPŒIA
1914

THE
BRITISH PHARMACOPŒIA
1914

PUBLISHED UNDER THE DIRECTION OF

THE GENERAL COUNCIL OF
MEDICAL EDUCATION AND REGISTRATION
OF THE UNITED KINGDOM

PURSUANT TO THE ACTS
XXI & XXII VICTORIA CAP XC. (1858)
AND XXV & XXVI VICTORIA CAP XCI (1862)



LONDON
PUBLISHED FOR THE GENERAL MEDICAL COUNCIL
BY
CONSTABLE & CO. LTD. 10 ORANGE STREET LEICESTER SQUARE W.C.
1914

THE
BRITISH PHARMACEUTICAL ASSOCIATION

1915

TO THE MEMBERS OF THE ASSOCIATION

TO THE MEMBERS OF THE ASSOCIATION

TO THE MEMBERS OF THE ASSOCIATION

TO THE MEMBERS OF THE ASSOCIATION

TO THE MEMBERS OF THE ASSOCIATION

TO THE MEMBERS OF THE ASSOCIATION

TO THE MEMBERS OF THE ASSOCIATION

ROYAL COLLEGE
OF PHYSICIANS OF IRELAND,
5 FEB. 1915
LIBRARY.

WELLCOME
LIBRARY

m

25471

THE GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION OF THE UNITED KINGDOM.

President of the General Council.
SIR DONALD MACALISTER, K.C.B., M.D.

Members of the General Council.

NORMAN MOORE, M.D.		
SIR HENRY MORRIS, BART., F.R.C.S.		
GEORGE WILKS, M.B.		
ARTHUR THOMSON, M.B., F.R.C.S.		
SIR T. CLIFFORD ALLBUTT, K.C.B., M.D.		
SIR GEORGE HARE PHILIPSON, M.D.		
FREDERICK TAYLOR, M.D.		
GRAFTON ELLIOT SMITH, M.D.		
ROBERT SAUNDY, M.D.		
RICHARD CATON, M.D.		
ALFRED GEORGE BARRS, M.D.		
RUTHERFORD J. PYE-SMITH, F.R.C.S.		
SIR H. ISAMBARD OWEN, M.D.		
DAVID HEPBURN, M.D.		
WILLIAM RUSSELL, M.D.		
JAMES W. B. HODSDON, F.R.C.S. Ed		
DAVID NEILSON KNOX, M.B.		
SIR THOMAS RICHARD FRASER, M.D.		
SIR DONALD MACALISTER, K.C.B., M.D.		
JOHN THEODORE CASH, M.D.		
JOHN YULE MACKAY, M.D.		
SIR JOHN WILLIAM MOORE, M.D.		
SIR LAMBERT ORMSBY, F.R.C.S.I.		
FRANCIS GEORGE ADYE-CURRAN, M.D.		
SIR CHARLES BENT BALL, BART., F.R.C.S.		
RT. HON. SIR CHRISTOPHER J. NIXON, BART., M.D.		
SIR WILLIAM WHITLA, M.D.		
CHARLES SISSMORE TOMES, F.R.C.S.		
ARTHUR NEWSHOLME, C.B., M.D.		
SIR FRANCIS H. CHAMPNEYS, BART., M.D.		
JOHN CHRISTIE McVAIL, M.D.		
JAMES LITTLE, M.D.		
HENRY WILLIAM LANGLEY BROWNE, M.D.		
HENRY ARTHUR LATIMER, M.D.		
JAMES ALEXANDER MACDONALD, M.D.		
THOMAS JENNER VERRALL, M.R.C.S.		
NORMAN PURVIS WALKER, M.D.		
LEONARD KIDD, M.D.		

	Royal College of Physicians of London.
	Royal College of Surgeons of England.
	Apothecaries' Society of London.
	University of Oxford.
	University of Cambridge.
	University of Durham.
	University of London.
	Victoria University of Manchester.
	University of Birmingham.
	University of Liverpool.
	University of Leeds.
	University of Sheffield.
	University of Bristol.
	University of Wales.
	Royal College of Physicians of Edinburgh.
	Royal College of Surgeons of Edinburgh.
	Royal Faculty of Phys. and Surg. of Glasgow.
	University of Edinburgh.
	University of Glasgow.
	University of Aberdeen.
	University of St. Andrews.
	Royal College of Physicians in Ireland.
	Royal College of Surgeons of Ireland.
	Apothecaries' Hall of Ireland.
	University of Dublin.
	National University of Ireland.
	Queen's University of Belfast.
	His Majesty, with the advice of His Privy Council.
	Direct Representatives.

Treasurers of the General Council.

CHARLES SISSMORE TOMES, F.R.C.S. SIR HENRY MORRIS, BART, F.R.C.S.
Registrar of the General Council, and of the Branch Council for England.
NORMAN C. KING.

Registrar of the Branch Council for Scotland.
JAMES ROBERTSON.

Registrar of the Branch Council for Ireland.
RICHARD J. E. ROE.

NOTICE

IN accordance with the provisions of the Medical Act,
1862, the exclusive right of publishing, printing, and
selling the British Pharmacopœia is vested in the General
Council of Medical Education and Registration of the
United Kingdom.

PREFACE

TO THE
BRITISH PHARMACOPŒIA, 1914

THE Medical Act of 1858, section 54, enacts that ‘the General Council shall cause to be published under their direction a Book containing a list of medicines and compounds, and the manner of preparing them, together with the true weights and measures by which they are to be prepared and mixed, and containing such other matter and things relating thereto as the General Council shall think fit, to be called “The British Pharmacopœia”; and the General Council shall cause to be altered, amended, and republished, such Pharmacopœia as often as they shall deem it necessary.’

The Medical Council Act, 1862 (25th and 26th Victoria, cap. 91), recites among other things that different Pharmacopœias have hitherto been in use in England, Scotland, and Ireland, and that the Pharmacopœia to be published by the General Council is intended to supersede the above-mentioned Pharmacopœias, and enacts that ‘the British Pharmacopœia, when published, shall for all purposes be deemed to be substituted throughout Great Britain and Ireland for the several above-mentioned Pharmacopœias; and any Act of Parliament, Order in Council, or custom relating to any such last-mentioned Pharmacopœias shall be deemed, after the publication of the *British Pharmacopœia*, to refer to such Pharmacopœia.’

In compliance with and under the sanction and authority of these Acts of Parliament, the Council reduced to uniformity the several processes and descriptions of the Pharmacopœias of London, Edinburgh, and Dublin, and published, in 1864 in London, the British Pharmacopœia. A second Pharmacopœia was published in 1867, and an Addendum in 1874. A third Pharmacopœia was prepared in 1885, and a further Addendum in 1890. A fourth Pharmacopœia was issued in 1898, and an Indian and Colonial Addendum in 1900. This Addendum, at the request of the Government of India, was modified to suit Indian requirements, and published as 'The Government of India Edition' in 1901. The issue of 1914 is the fifth British Pharmacopœia.

The Council has desired, in each issue of the British Pharmacopœia, to afford to the members of the Medical Profession and those engaged in the preparation of medicines throughout the British Empire one uniform standard and guide, whereby the nature and composition of substances to be used in medicine may be ascertained and determined. For the accomplishment of this object, the Council when preparing the fourth British Pharmacopœia (1898), sought with the aid of Her Majesty's Privy Council, the assistance of various Medical and Pharmaceutical Bodies in India and the Dominions overseas, and incorporated many of the recommendations of these Bodies in the text. A small number of alternative substances or preparations for which official recognition had been desired for use in particular parts of the Empire, received sanction for this purpose by mention in an Appendix. Certain medicinal plants and other substances suggested for inclusion by the Indian and Colonial Authorities were dealt with more fully in the Addendum of 1900. In preparing the present Pharmacopœia the Council has again received through

His Majesty's Privy Council, with the co-operation of the India Office and the Colonial Office, much help from the Dominions overseas, and by the inclusion in the text of such articles as have stood the test of time and experience, has now been able to dispense with a separate Addendum, and to produce a British Pharmacopœia suitable for the whole Empire.

No figures or detailed descriptions of plants yielding official substances are given in the text of the present Pharmacopœia. The histological characters of the parts of plants officially recognised have been described whenever the information is important. In many instances where drugs of vegetable origin are used in a powdered form, the histological characters of the powder are given when by chemical testing alone the identity of the article in question could not be certainly determined.

The names of official substances defined in the text are printed with capital initial letters ; while words in the text which refer to articles, reagents, and processes defined or described in an Appendix are printed in *italics*.

No material change has been made in chemical nomenclature. Generally the familiar Latin titles have been retained unaltered, but in some instances the English titles of chemical substances have been modified to accord with current usage. The English titles are not, as a rule, literal translations of the Latin titles. Of synonyms, only the more important of those employed in prescribing have been inserted.

Abbreviations of the Latin titles, such as are commonly used in prescribing, have been employed in the Index ; from a courteous communication from Dr. Remington, Chairman of the United States Pharmacopœial Convention, the Council has learned that similar abbreviations are

likely to be adopted in the forthcoming Pharmacopœia of the United States.

With regard to the Weights and Measures of the British Pharmacopœia, in accordance with modern scientific practice the metric system has been employed for all pharmaceutical and analytical computations. The metric system has also been employed for the specification of doses, in the expectation that in the near future the system will be generally adopted by British prescribers. At the present time students and practitioners of medicine are accustomed to use the metric system in connexion with the work of chemical, physical, physiological, pathological, and pharmacological laboratories, and it will facilitate the application of science to practice when the same system is used for therapeutic purposes. As a transitional provision, doses have also been expressed in terms of the imperial system ; but it is necessary to call special attention to the fact that the relation between the metric and the imperial dose of a given preparation, as set forth in the text, is that of approximate equivalence only. For convenience, whole numbers have generally been employed in stating doses expressed according to the imperial system, with but small deviation from the doses already familiar by long usage ; whole numbers have, for a like reason, been employed in stating doses expressed according to the metric system ; but as fractional differences are thus necessarily ignored, the two sets of whole numbers do not in general express exactly the same quantities.

It must be clearly understood that the 'doses' mentioned in the Pharmacopœia are not authoritatively enjoined by the Council, as binding upon prescribers. They are intended merely for general guidance, and represent, in each instance, the average range of the quantities which, in ordinary cases, are usually prescribed for adults. The

medical practitioner must exercise his own judgment and act on his own responsibility in respect of the amount of any therapeutic agent he may prescribe or administer. Where, however, an unusually large dose appears to be prescribed, it is the duty of the pharmacist or dispenser to satisfy himself that the prescriber's intention has been correctly interpreted.

The Board of Trade (May 1, 1908) recognised 'mil' as a short official designation for the millilitre, 'decimil' for the tenth of a millilitre, and 'centimil' for the hundredth of a millilitre. These convenient terms are used in stating the 'metric' doses; but in paragraphs relating to analysis, and in those relating to the manufacture of galenical preparations, the term 'millilitre' is always employed.

In the description of analytical processes the term 'drop' is often used. In accordance with the Brussels Agreement, 1902, the external diameter of the dropping-tube is to be exactly 3 millimetres; at 15.5° , 20 drops of distilled water from this dropping-tube are equivalent to 1 millilitre.

It is to be regretted, from a theoretical point of view, that the graduation and in certain cases the employment by analysts of metric and imperial vessels for purposes of measurement, and the adjustment and in most cases the employment of vessels for determining specific gravities, are not conducted at one and the same standard temperature. But the practical advantage of rendering these temperatures identical would be insignificant, while the resulting confusion would be serious. As regards such operations, therefore, the Pharmacopœia employs metric measures and volumetric vessels graduated at 15.5° C. (60° F.); while for the purposes for which the imperial system is employed measuring vessels are recognised which have been graduated at 16.7° C. (62° F.), the temperature authorised by the Weights and Measures Act, 1878.

When a 'water-bath' is directed to be used, it is to be understood that this term refers to an apparatus by means of which water or its vapour, at a temperature not exceeding 100° , is applied to the outer surface of a vessel containing the substance to be heated, which substance may thus be subjected to a heat near to, but necessarily below, that of 100° . The term 'steam-bath' is used when it is desired to employ steam at a temperature of or over 100° .

The paragraphs in former issues which were more or less descriptive of the sources or modes of manufacture of official chemical substances have been abbreviated, so far as the requirements of the Medical Act of 1858 will permit, but descriptions of the characters and tests by which the substances may be identified, and by which their freedom from impurity may be determined, have been extended and increased in number.

The qualitative tests by which the basylous and acidulous radicals of ordinary salts are recognised, and by which common impurities are detected, instead of being many times repeated in the text, as in previous issues of the Pharmacopœia, are given once for all in an Appendix, the text simply stating the names of the radicals or other matters which should be present or absent respectively. Special tests applicable to particular substances only, or tests rarely employed, remain in the text. It follows that the appended list of tests is not exhaustive, having been constructed only to meet official requirements.

The composition of Solutions employed for Volumetric Determinations is given in detail in an Appendix. In accordance with chemical usage it has been found convenient to express different degrees of dilution in fractional terms of a normal solution, $N/1$, while the abbreviation '*T.Sol.*' has been applied in two instances in the Appendix, to avoid confusion with other solutions of different

strengths which have already been defined in the text of the Pharmacopœia.

In many instances it has been found desirable to indicate a limit to the proportion of lead or of arsenic permissibly present as an impurity in a pharmacopœial substance. Such limits are noted in the text, while details of the mode of employing the appropriate quantitative tests are given in an Appendix. The same practice has been adopted with respect to many of the methods relating to the determination of Acid Value, Saponification Value, Iodine Value, Unsaponifiable Matter, Esters, and Alcohols. These methods are given in an Appendix, while in the text of the several monographs relating to Fixed Oils, Fats, Waxes, Resins, and Volatile Oils only the numbers expressing the pharmacopœial values are stated.

The solubility of a substance is expressed by stating the number of millilitres of the solvent in which one gramme of a solid or one millilitre of a liquid will remain in solution at a temperature of 15·5°. The strength of a solution is expressed by stating the number of grammes of a solid or millilitres of a liquid which are to be contained in a given number of millilitres of the solution; thus a solution 1 in 10 means that one gramme of a solid or one millilitre of a liquid is to be contained in ten millilitres of the solution.

In stating the 'solution' relations of chemical substances to acid, alkaline, or saline liquids, the term 'solubility' is necessarily sometimes used in a general sense irrespective of more or less obvious concomitant chemical changes.

The atomic weights adopted in the British Pharmacopœia are in accordance with the latest values agreed upon by the International Committee on Atomic Weights. The values are based upon that of Oxygen, instead of Hydrogen as

THE HISTORY OF THE

REIGN OF KING CHARLES THE FIRST

IN THE YEAR 1649

BY JOHN BURNET

OF THE UNIVERSITY OF OXFORD

IN TWO VOLUMES

LONDON, Printed by J. Streater, at the Sign of the Gun, in St. Dunstons Church-yard, 1680.

THE SECOND VOLUME

CONTAINING THE HISTORY OF THE

REIGN OF KING CHARLES THE FIRST

IN THE YEAR 1649

BY JOHN BURNET

OF THE UNIVERSITY OF OXFORD

IN TWO VOLUMES

LONDON, Printed by J. Streater, at the Sign of the Gun, in St. Dunstons Church-yard, 1680.

THE SECOND VOLUME

CONTAINING THE HISTORY OF THE

REIGN OF KING CHARLES THE FIRST

IN THE YEAR 1649

BY JOHN BURNET

OF THE UNIVERSITY OF OXFORD

IN TWO VOLUMES

LONDON, Printed by J. Streater, at the Sign of the Gun, in St. Dunstons Church-yard, 1680.

THE SECOND VOLUME

CONTAINING THE HISTORY OF THE

REIGN OF KING CHARLES THE FIRST

IN THE YEAR 1649

BY JOHN BURNET

OF THE UNIVERSITY OF OXFORD

IN TWO VOLUMES

LONDON, Printed by J. Streater, at the Sign of the Gun, in St. Dunstons Church-yard, 1680.

heretofore. In quantitative testing, the specified amounts of solid or liquid substances are intended only as proportions indicating official standards of purity, and are not necessarily prescribed as the weights or volumes to be actually used in the operations. The amount in millilitres of a volumetric solution which will react with a stated amount of a solid or liquid substance, instead of being extended to the several places of decimals which theory might justify, is given only to such a degree of accuracy as may easily be attained in reading off the graduations of an ordinary burette. In short, the details of procedure in these and other chemical operations are now left to the skill and judgment of pharmacists and analysts who are assumed to be fully trained.

In the Pharmacopœia of 1885 an endeavour was made for the first time to fix the alkaloidal strength of some of the Tinctures. In the Pharmacopœia of 1898 a further step was taken by specifying in a number of cases the amount of the more important alkaloid, or of 'total alkaloid,' which ought to be present. In the present Pharmacopœia the number of crude drugs and of their galenical preparations which are required to contain a definite proportion of the chief active constituent or constituents has been increased, and the official processes for their 'assay' have been revised. With the same object it has been found desirable to prepare the Extracts of Belladonna, Hyoscyamus, Nux Vomica, and Opium in the form of dry powders, of which the alkaloidal strengths can be more readily determined.

In the case of drugs of definite chemical composition there has been a similar extension of the number to which 'assay' processes are to be applied, and, in general, the minimum degree of purity required is specified in the definition of the drug.

The tests for the Volatile Oils and for the Fixed Oils and

allied substances have been revised, and additional tests of identity and purity have been introduced.

Most of the Liquid Extracts are of such a strength that one hundred millilitres represent one hundred grammes of the drug employed. The Liquid Extract of Belladonna, used as the basis of other preparations of the drug, and the Liquid Extract of Ipecacuanha, the basis of the Vinegar and of the Wine of Ipecacuanha, contain definite proportions of total alkaloids. The Liquid Extract of Nux Vomica, from which the solid Extract is now prepared, contains a definite proportion of strychnine. When dry extracts and liquid extracts are derived from the same source, the word 'Siccum' is attached to the designation of the former, and the word 'Liquidum' to the latter.

The 'Liquores Concentrati,' which were tentatively introduced in 1898 as approximate equivalents of certain Decoctions and Infusions, have been little used and have been omitted from the Pharmacopœia.

An International Conference respecting the Unification of the Formulæ for Potent Drugs and Preparations in the several National Pharmacopœias held at Brussels on September 15-20, 1902, led to the adoption by the participating States of a series of recommendations commonly referred to as 'The Brussels Agreement.' These recommendations have necessitated certain changes in the preparation, composition, and strength of important galenical compounds containing potent ingredients, with the object of promoting uniformity in the pharmacopœial usage of different countries. They have already been embodied more or less completely in the various national pharmacopœias that have been issued since 1902. The changes in the British Pharmacopœia thereby occasioned are generally slight; they have been indicated in the Prefatory Tables and in footnotes, while a separate Prefatory Table gives a list

THE INTERNATIONAL UNION

The International Union of Pure and Applied Chemistry (IUPAC) is a non-governmental organization that coordinates and standardizes chemical nomenclature, symbols, and units. It was founded in 1912 and is now one of the largest international scientific organizations. The union is composed of national chemical societies from various countries, which work together to develop and maintain a common language for chemistry. This is essential for the advancement of the science, as it allows scientists from different countries to communicate effectively and share their findings. The IUPAC also plays a key role in the development of new chemical standards and the promotion of chemical education. Its work is vital to the global chemical community, ensuring that everyone is on the same page when it comes to the language of chemistry.

of deviations from the Brussels Agreement, with the reasons for departure from the recommendations.

The British practice of measuring liquids by volume and solids by weight has been maintained. It is more convenient, both to prescribers and to dispensers, than the continental practice, contemplated in the Agreement, of weighing liquids as well as solids. The variations caused by this difference of usage are, however, of no great importance.

Different degrees of coarseness or fineness of the powders of drugs are distinguished by numbers, such as No. 20 or No. 60, which in the sieves employed by pharmacists, indicate the number of parallel wires of the usual thickness, included in a length of 2.54 centimetres (1 linear inch), in either transverse direction.

It has not been thought desirable to describe, in the Pharmacopœia, various pharmaceutical devices which have been introduced in recent years for the more easy administration of medicines. When so directed by the prescriber, the drugs of the Pharmacopœia may be dispensed in non-official forms such as capsules, cachets, granules, compressed discs or tablets, and the like ; but the drugs themselves, in all such cases, must respond to the official characters and tests.

In selecting additions to the Pharmacopœia, and in deciding on the omission of articles contained in the Pharmacopœia of 1898, the Council has received important aid from the following Authorities :—

The Royal College of Physicians of London

The Royal College of Surgeons of England

The Apothecaries' Society of London

The University of Cambridge

The University of Durham

The University of London

The Victoria University of Manchester

The University of Birmingham

The University of Liverpool

The University of Leeds

The Royal College of Physicians of Edinburgh

STATE OF NEW YORK

1891

IN SENATE,
January 14, 1891.
REPORT
OF THE
COMMISSIONER OF THE LAND OFFICE,
IN ANSWER TO A RESOLUTION
PASSED BY THE SENATE,
MAY 1, 1890.

ALBANY:
J. B. LIPPINCOTT & CO.,
PRINTERS,
1891.

ALBANY:
J. B. LIPPINCOTT & CO.,
PRINTERS,
1891.

BRITISH PHARMACOPŒIA, 1914 xvii

The Royal College of Surgeons of Edinburgh	The Royal College of Physi- cians of Ireland
The Royal Faculty of Physi- cians and Surgeons of Glasgow	The Royal College of Sur- geons of Ireland
The University of Edinburgh	The Apothecaries Hall of Ireland
The University of Glasgow	The University of Dublin
The University of Aberdeen	
The University of St Andrews	

The Council has also been aided, as regards the inclu-
sion or omission of articles contained in the Pharmacopœia
of 1898, by several independent inquiries as to the fre-
quency with which the various official preparations have
actually been prescribed in different localities.

The Council, recognising that it was desirable to obtain
the co-operation of medical, pharmaceutical, chemical, and
botanical authorities throughout the Empire, has taken
effective steps to this end in preparing the present Pharma-
copœia, which has been in course of preparation for several
years.

Thus they have instituted—

(1) A Pharmacopœia Conference, consisting of members
of the Council and the following delegates nominated by
the Pharmaceutical Societies of the United Kingdom:

*MR CHARLES EGIN	MR G. D. BEGGS
DR INGLIS CLARK	MR WALTER HILLS
*MR K. J. DOWNS	

(2) A Committee of Reference in Pharmacy, consisting
of the following members nominated by the Pharmaceutical
Society of Great Britain and the Pharmaceutical Society of
Ireland:

MR W. N. ALLEN	MR E. W. LUCAS
MR F. C. J. BIRD	MR G. LUNAN
MR J. E. BRUNKER	†MR G. F. MERSON
MR D. B. DOTT	MR J. C. UMNEY
PROFESSOR H. G. GREENISH	MR EDMUND WHITE
MR C. A. HILL	††MR R. WRIGHT
MR W. KIRKBY	

* Since deceased. † Resigned 1908. †† Resigned 1911.

Of this Committee of Reference the following delegates of the Pharmaceutical Societies of the United Kingdom were members *ex officio* : Mr. Walter Hills, Dr. Inglis Clark, Mr. G. D. Beggs. Mr. Walter Hills was elected Chairman, and Professor H. G. Greenish, Secretary.

(3) A Committee of Reference in Chemistry, consisting of Sir T. E. Thorpe, F.R.S., and Dr. J. J. Dobbie, F.R.S. ; and a Committee of Reference in Botany, consisting of Sir David Prain, F.R.S., and Mr. E. Morell Holmes.

(4) A series of official inquiries transmitted by the courtesy of the Colonial Office and of the India Office to all the Governments and Administrations of the Empire, asking for the co-operation of their respective Medical and Pharmaceutical Authorities in the work of adapting the new Pharmacopœia to the requirements of all parts of the British Dominions. In preparing the text of the Pharmacopœia the most careful consideration has been given to a large number of suggestions which, in response to these inquiries, have been received through the Secretaries of State, from these Medical and Pharmaceutical Authorities, and in particular from those of South Australia, Fiji, Falkland Islands, Bahamas, British Honduras, British Guiana, Barbados, St Lucia, Leeward Islands, Natal, Orange Free State Province, St Helena, Sierra Leone, Gambia, British Central Africa, Malta, Hong Kong and Wei Hai Wei, Mauritius, Straits Settlements, India, Transvaal, Western Australia, Cape Town, Ceylon, New Zealand.

The Council has made constant use of important practical researches which have been carried on by British pharmacists at the request, in many instances, of the Pharmacopœia Committee of the Council, the Pharmacopœia Conference, or the Committee of Reference in Pharmacy. The following publications have had a special bearing on the work of revision :

- ‘A Digest of Researches and Criticisms,’ by Dr John Attfield, F.R.S., 1900.
- ‘Digest of Researches and Criticisms,’ by W. Chatterway, F.I.C., 1903.
- ‘Report and Recommendations with reference to the Tests for the Detection of Arsenic in the Drugs of the British Pharmacopœia,’ by Professor W. R. Dunstan, M.A., LL.D., F.R.S., and H. H. Robinson, M.A., F.C.S.
- ‘The Solubility of the Chemical Substances mentioned in the British Pharmacopœia,’ by Professor H. G. Greenish, F.I.C., and F. A. Upsher Smith.
- ‘The Essential Oils of the British Pharmacopœia,’ by C. A. Hill, B.Sc., F.I.C., and John C. Umney, F.C.S.
- ‘The Oils, Fats, and Waxes of the British Pharmacopœia,’ by E. W. Lucas, F.I.C., F.C.S., and F. C. J. Bird.
- ‘The most suitable Limit-Test for Arsenic in Official Substances and Preparations and the Limits for Arsenic that may reasonably be adopted,’ by C. A. Hill, B.Sc., F.I.C.
- ‘Quantitative Colorimetric Test for Lead,’ by C. A. Hill, B.Sc., F.I.C.
- ‘On the Official Ointments, with special reference to the Substances used as Bases,’ by R. B. Wild, M.D., M.Sc., M.R.C.P.
- ‘Enquiries on the Value of Ointment Bases under different Climatic Conditions,’ by E. W. Lucas, F.I.C., F.C.S.

In addition the Committee of Reference in Pharmacy has presented to the Council a series of important reports and recommendations, which have been published from time to time for the information of medical practitioners and

pharmacists, and widely circulated. These publications, and the expert criticisms they have evoked, have been freely used in the preparation of the present Pharmacopœia.

The Pharmacopœia has been edited by Professor Tirard, M.D., F.R.C.P., of King's College, University of London, and Professor H. G. Greenish, F.I.C., of the Pharmaceutical Society of Great Britain.

The general supervision of the work has been entrusted by the Medical Council to a Pharmacopœia Committee, which since 1898, the date of the last issue, has included the following past members :

DR LEECH	MR TICHBORNE
SIR DAVID McVAIL	SIR JOHN BATTY TUKE
MR BRUDENELL CARTER	DR ATTHILL
SIR DYCE DUCKWORTH	DR J. F. PAYNE
DR LITTLE	

The present members of the Pharmacopœia Committee are :

SIR DONALD MACALISTER, President, *Chairman*

DR NORMAN MOORE	SIR THOMAS FRASER
SIR GEORGE PHILIPSON	DR CASH
DR CATON	SIR JOHN MOORE
DR BARRS	SIR WILLIAM WHITLA

with PROFESSOR TIRARD, the senior Editor, as *Secretary*.

OFFICE OF THE GENERAL MEDICAL COUNCIL.
299 OXFORD STREET, LONDON, W.
1914.

DIVISIONS OF THE BRITISH EMPIRE REFERRED TO IN
THE BRITISH PHARMACOPŒIA.

Under "Colonies" are included certain Provinces, Protectorates, etc.

India.—Ajmer-Merwara, The Andamans, Assam, Bengal, Berar, Bombay, British Baluchistan, Burma, The Central Provinces, Coorg, Madras, The North-West Provinces and Oudh, the Punjab, Sind.

African Colonies.—Basutoland, Bechuanaland Protectorate, Gambia, Gold Coast, Lagos, Northern Nigeria, The Rhodesias, Saint Helena, Sierra Leone, Southern Nigeria, Swaziland, The Union of South Africa (provinces of Cape of Good Hope, Natal, Orange Free State, Transvaal).

Australasian Colonies.—New South Wales, Queensland, South Australia, Tasmania, Victoria, Western Australia; forming the Commonwealth of Australia. Fiji Islands, New Zealand, Papua, Western Pacific.

Eastern Colonies.—Ceylon, Hong Kong, Labuan, Mauritius, Seychelles Islands, Straits Settlements, Weihaiwei.

Mediterranean Colonies.—Cyprus, Gibraltar, Malta.

North American Colonies.—Alberta, British Columbia, Manitoba, New Brunswick, North-west Territories, Nova Scotia, Ontario, Prince Edward Island, Quebec, Saskatchewan; forming the Dominion of Canada. Newfoundland.

West Indian Colonies.—Bahama Islands, Barbados, Bermuda Islands, British Guiana, British Honduras, Jamaica and Turks and Caicos Islands, Leeward Islands (Antigua, Dominica, Montserrat, Saint Christopher and Nevis, Virgin Islands), Trinidad and Tobago, Windward Islands (Grenada, Saint Lucia, Saint Vincent).

The Falkland Islands in the South Atlantic.

ARTICLES AND PREPARATIONS INCLUDED IN THE BRITISH
PHARMACOPEIA OF 1914, WHICH WERE NOT IN THAT
OF 1898, NOR IN THE INDIAN AND COLONIAL AD-
DENDUM OF 1900.

Acetonum	Ipomœæ Orizabensis Radix
Acidum Acetylsalicylicum	Liquor Adrenalini Chloridi
Acidum Hydriodicum Dilutum	Liquor Cresolis Saponatus
Adrenalinum	Liquor Formaldehydi
Barbitonum	Liquor Formaldehydi Saponatus
Benzaminæ Lactas	Methyl Salicylas
Calcii Lactas	Methylsulphonal
Cantharidinum	Pelletierinæ Tannas
Chloral Formamidum	Resorcinum
Cresol	Sennæ Fructus
Diamorphinæ Hydrochloridum	Strontii Bromidum
Ethyl Chloridum	Syrupus Acidi Hydriodici
Ferri Phosphas Saccharatus	Theobrominæ et Sodii Salicylas
Guaiacol	Unguentum Lanæ Compositum
Guaiacol Carbonas	Unguentum Plumbi Subacetatis
Hexamina	Zinci Oleostearas
Injectio Strychninæ Hypo- dermica	

ARTICLES AND PREPARATIONS INCLUDED IN THE BRITISH
PHARMACOPEIA OF 1898, OR IN THE INDIAN AND
COLONIAL ADDENDUM OF 1900, BUT OMITTED IN THE
BRITISH PHARMACOPEIA OF 1914.

Acalypha	— Arnicæ Rhizoma
— Acetum Ipecacuanhæ	Azadirachta Indica
Acetum Mylabridis	— Bismuthi Oxidum
— Acidum Gallicum	Calotropis
Adhatoda	— Cambogia
— Ammonii Phosphas	Cambogia Indica
Andrographis	— Cantharis
Antimonium Nigrum Purifica- tum	— Caoutchouc
— Aqua Pimentæ	— Cerii Oxalas
— Aqua Sambuci	— Charta Sinapis
— Argenti Oxidum	— Cimicifugæ Rhizoma
Aristolochia	— Cissampelos
	— Cocæ Folia

— Conii Folia	Liquor Andrographidis Concen-
— Conii Fructus	tratus
— Coscinium	Liquor Aristolochiæ Concen-
— Crocus	tratus
— Cuspariæ Cortex	Liquor Berberidis Concentratus
— Decoctum Cissampeli	— Liquor Calumbæ Concentratus
— Decoctum Granati Compositis	— Liquor Caoutchouc
— Decoctum Hygrophilæ	— Liquor Coscinii Concentratus
— Elaterinum	— Liquor Chirati Concentratus
— Elaterium	— Liquor Cuspariæ Concentratus
— Emplastrum Ammoniaci cum	— Liquor Epispasticus Mylabridis
Hydrargyro	— Liquor Krameriæ Concentratus
— Emplastrum Calefaciens Myla-	— Liquor Quassiæ Concentratus
bridis	— Liquor Sarsæ Compositus Con-
— Emplastrum Mylabridis	centratus
— Emplastrum Opii	— Liquor Rhei Concentratus
— Emplastrum Picis	— Liquor Senegæ Concentratus
— Emplastrum Plumbi Iodidi	— Liquor Sennæ Concentratus
— Extractum Acalyphæ Liquidum	— Liquor Serpentariæ Concentratus
— Extractum Adhatodæ Liquidum	— Liquor Sodii Ethylatis
— Extractum Anthemidis	— Liquor Thyroidei
— Extractum Belladonnæ Viride	— Liquor Tinosporæ Concentratus
— Extractum Cimicifugæ Liquidum	— Liquor Toddaliæ Concentratus
— Extractum Cissampeli Liquidum	— Lupulinum
— Extractum Cocæ Liquidum	— Lupulus
— Extractum Jaborandi Liquidum	— Mezerei Cortex
— Extractum Glycyrrhiæ Spirit-	— Mistura Creosoti
uosum	— Mistura Spiritus Vini Gallici
— Extractum Pareiræ Liquidum	— Moschus
— Extractum Physostigmatis	— Mylabris
— Extractum Sarsæ Liquidum	— Oleum Pimentæ
— Extractum Taraxaci Liquidum	— Papaveris Capsulæ
— Ferri Arsenas	— Pareiræ Radix
— Ferri Phosphas	— Physostigmatis Semina
— Ficus	— Picrotoxinum
— Galbanum	— Pilula Aloes Socotrinæ
— Granati Cortex	— Pilula Cambogiæ Composita
— Hemidesmi Radix	— Pilula Galbani Composita
— Hygrophila	— Pilula Scammonii Composita
— Infusum Andrographidis	— Pimenta
— Infusum Azadirachtæ Indicæ	— Piper Nigrum
— Infusum Coscinii	— Pix Burgundica
— Infusum Cuspariæ	— Plumbi Carbonas
— Infusum Lupuli	— Prunum
— Infusum Serpentariæ	— Pulvis Elaterini Compositus
— Infusum Tinosporæ	— Sambuci Flores
— Infusum Toddaliæ	— Sarsæ Radix
— Jaborandi Folia	— Sassafra Radix

ALTERATIONS OF NAME

xxv

Scammonium	Tinctura Aristolochiæ
Sinapis	Tinctura Arnicæ
Sinapis Albæ Semine	Tinctura Azadirachtæ Indicæ
Sinapis Nigræ Semina	Tinctura Calotropis
Sodii Sulphocarbolas	Tinctura Cimicifugæ
Sodium	Tinctura Conii
Spiritus Ætheris Compositus	Tinctura Croci
Spiritus Vini Gallici	Tinctura Jaborandi
Succus Acalyphæ	Tinctura Lupuli
Succus Adhatodæ	Tinctura Sumbul
Succus Belladonnæ	Tinctura Tinosporæ
Succus Conii	Tinospora
Succus Hyoscyami	Toddalia
Sulphuris Iodidum	Tylophonæ Folia
Sumbul Radix	Unguentum Conii
Syrupus Hemidesmi	Unguentum Plumbi Acetatis
Thus Americanum	Unguentum Sulphuris Iodidi
Tinctura Adhatodæ	Unguentum Veratrinæ
Tinctura Alves	Veratrina
Tinctura Andrographidis	Zinci Sulphocarbolas

ARTICLES AND PREPARATIONS THE NAMES OF WHICH HAVE BEEN ALTERED.

Former Names, 1898 or 1900.	Present Names, 1914.
Acetum Cantharidis	Acetum Cantharidini
Adeps	Adeps Præparatus
Aloe Barbadosensis }	Aloe
Aloe Socotrinæ }	
Alumen	Alumen Purificatum
Benzol	Benzenum
Borax	Borax Purificatum
Carbonis Bisulphidum	Carbon Disulphidum
Emplastrum Cantharidis	Emplastrum Cantharidini
Eucalypti Gummi	Kino Eucalypti
Extractum Aloes Barbadosensis	Extractum Aloes
Extractum Belladonnæ Alcoholicum	Extractum Belladonnæ Siccum
Extractum Cascaræ Sagradæ	Extractum Cascaræ Sagradæ Siccum
Extractum Euonymi Siccum	Extractum Euonymi
Extractum Hyoscyami Viride	Extractum Hyoscyami Siccum
Extractum Nucis Vomice	Extractum Nucis Vomice Siccum
Ferrum Tartaratum	Ferri et Potassii Tartras
Hydrargyri Oleas	Hydrargyrum Oleatum
Linum	Lini Semina
Linum Contusum	Lini Semina Contusa

Liquor Iodi Fortis . . .	Tinctura Iodi Fortis
Oleum Gynocardiaë . . .	Oleum Chaulmoogræ
Oleum Pini . . .	Oleum Abietis
Oleum Terebinthinæ . . .	Oleum Terebinthinæ Rectificatum
Pilula Aloes Barbadosensis . . .	Pilula Aloes
Rhei Radix . . .	Rhei Rhizoma
Senna Alexandrina } . . .	Sennæ Folia
Senna Indica }	
Soda Tartarata . . .	Sodii et Potassii Tartras
Sodii Arsenas . . .	Sodii Arsenas Anhydrosus
Syrupus Codeinæ . . .	Syrupus Codeinæ Phosphatis
Tinctura Cantharidis . . .	Tinctura Cantharidini
Tinctura Colchici Seminum . . .	Tinctura Colchici
Tinctura Iodi . . .	Tinctura Iodi Mitis
Trochiscus Eucalypti Gummi . . .	Trochiscus Kino Eucalypti
Unguentum Cantharidis . . .	Unguentum Cantharidini
Unguentum Glycerini Plumbi Subacetatis . . .	Unguentum Plumbi Subacetatis
Unguentum Gynocardiaë . . .	Unguentum Chaulmoogræ

ARTICLES AND PREPARATIONS OF THE BRITISH PHARMACOPŒIA OF 1898, OR OF THE INDIAN AND COLONIAL ADDENDUM OF 1900, THE COMPOSITION OF WHICH HAS BEEN ALTERED.

(Some minor alterations are not included.)

Acetum Cantharidini (Acetum Cantharidis)	Ferri Phosphas Saccharatus (Ferri Phosphas)
*Belladonnæ Folia	Hydrargyrum Oleatum (Hydrargyri Oleas)
Collodium Vesicans	*Hyoscyami Folia
Confectio Sulphuris	Injectio Ergotæ Hypodermica
Decoctum Aloes Compositum	Linimentum Hydrargyri
Emplastrum Calefaciens	Liquor Atropinæ Sulphatis
Emplastrum Cantharidini (Emplastrum Cantharidis)	Liquor Epispasticus
*Extractum Belladonnæ Siccum (Extractum Belladonnæ Alcoholicum)	Liquor Plumbi Subacetatis Dilutus
*Extractum Ergotæ	Lotio Hydrargyri Nigra
Extractum Hydrastis Liquidum	Mistura Ferri Composita
Extractum Hyoscyami Siccum	Oleum Phosphoratum
Extractum Ipecacuanhæ Liquidum	Oxymel Scillæ
Extractum Nucis Vomicaë Siccum (Extractum Nucis Vomicaë)	Oxymel Urginæ
Ferri Carbonas Saccharatus	Pilula Ferri
	Pilula Hydrargyri Subchloridi Composita
	Pilula Phosphori
	Syrupus Ferri Iodidi

ALTERATIONS

xxvii

Syrupus Rhei	Ungentum Aquæ Rosæ
Tinctura Cantharidini (Tinctura Cantharidis)	Unguentum Belladonnæ
Tinctura Cardamomi Composita	Unguentum Cantharidini (Unguentum Cantharidis)
Tinctura Cinchonæ Composita	Unguentum Capsici
*Tinctura Belladonnæ	Unguentum Cetacei
*Tinctura Hyoscyami	Unguentum Chrysarobini
Tinctura Pruni Virginianæ	Unguentum Hamamelidis
Tinctura Sennæ Composita	Unguentum Hydrargyri Ammoniati
Trochiscus Acidi Carbolici	Unguentum Iodoformi
Trochiscus Acidi Tannici	Unguentum Paraffini
Trochiscus Catechu	Unguentum Picis Liquidæ
Trochiscus Ipecacuanhæ	Unguentum Plumbi Iodidi
Unguentum Acidi Carbolici	

* These preparations approximately correspond with the requirements of the Brussels Agreement, September, 1902.

ARTICLES AND PREPARATIONS OF THE BRITISH PHARMACOPŒIA OF 1898, OR OF THE INDIAN AND COLONIAL ADDENDUM OF 1900, THE STRENGTHS OF WHICH HAVE BEEN ALTERED.

(Some minor alterations are not included.)

Acidum Aceticum Dilutum	Syrupus Codeinæ Phosphas (Syrupus Codeinæ)
Acidum Carbolicum Liquefactum	*Syrupus Ferri Iodidi
Acidum Hydrochloricum Dilutum	Tabellæ Trinitrini
Acidum Nitricum Dilutum	*Tinctura Aconiti
Acidum Phosphoricum Dilutum	*Tinctura Belladonnæ
Acidum Sulphuricum	Tinctura Camphoræ Composita
Acidum Sulphuricum Dilutum	Tinctura Cardamomi Composita
Amyl Nitris	*Tinctura Colchici
Calx Chlorinate	*Tinctura Digitalis
Emplastrum Belladonnæ	*Tinctura Nucis Vomicae
Ferri Carbonas Saccharatus	*Tinctura Opii
Ferri Phosphas Saccharatus (Ferri Phosphas)	Tinctura Opii Ammoniata
Glycerinum Pepsini	*Tinctura Strophanti
Linimentum Hydrargyri	Trochiscus Acidi Carbolici
Liquor Ferri Perchloridi Fortis	Unguentum Acidi Carbolici
Liquor Hydrargyri Perchloridi	*Unguentum Hydrargyri
Liquor Potassæ	Unguentum Hydrargyri Ammoniati
Potassa Caustica	Unguentum Hydrargyri Subchloridi
Spiritus Ætheris Nitrosi	*Vinum Antimoniale
Spiritus Juniperi	Vinum Aurantii
Syrupus Chloral	

* These preparations approximately correspond with the requirements of the Brussels Agreement, September, 1902.

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

DEVIATIONS FROM THE RECOMMENDATIONS OF THE
BRUSSELS AGREEMENT OF SEPTEMBER, 1902.

Name.	Recommendation.	Reason for Derivation.
ACONITI RADIX	Employ tuber of current year	Standardisation of root renders this limitation unnecessary.
EXTRACTUM BELLADONNÆ SICCUM	Prepare a solid extract (containing about 10 per cent. of water) by means of alcohol (70 per cent.)	Standardised dry powdered extract preferred to unstandardised moist extract.
EXTRACTUM HYOSCYAMI SICCUM	Prepare a solid extract (containing about 10 per cent. of water) by means of alcohol (70 per cent.)	Standardised dry powdered extract preferred to unstandardised moist extract.
IPECACUANHÆ RADIX	Powder only the root-bark rejecting the woody portion.	Unnecessary since the powder is standardised.
NUX VOMICA Extractum Nucis Vomiceæ, Tinctura Nucis Vomiceæ	Standardise in terms of total alkaloid.	Standardisation in terms of the more toxic alkaloid, strychnine, preferred on account of the high toxicity of Nux Vomica and its preparations. X
TINCTURA ACONITI	Standardise in terms of total alkaloid.	Standardisation in terms of ether-soluble alkaloid preferred as more scientific, and better adapted for the regulation of toxicity.

CONTENTS

	PAGE
LIST OF THE GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION OF THE UNITED KINGDOM, JANUARY 1914	
PREFACE TO THE BRITISH PHARMACOPŒIA	
LIST OF DIVISIONS OF THE BRITISH EMPIRE REFERRED TO IN THE BRITISH PHARMACOPŒIA	
LIST OF ARTICLES AND PREPARATIONS INCLUDED IN THE PRESENT EDITION OF THE BRITISH PHARMACOPŒIA, BUT NEITHER IN THE PHARMACOPŒIA OF 1898, NOR IN THE INDIAN AND COLONIAL ADDENDUM OF 1900	
LIST OF ARTICLES AND PREPARATIONS INCLUDED IN THE BRITISH PHARMACOPŒIA OF 1898, OR IN THE INDIAN AND COLONIAL ADDENDUM OF 1900, BUT OMITTED IN THIS EDITION	
LIST OF ARTICLES AND PREPARATIONS THE NAMES OF WHICH HAVE BEEN ALTERED	
LIST OF ARTICLES AND PREPARATIONS OF THE BRITISH PHARMACOPŒIA OF 1898, OR OF THE INDIAN AND COLONIAL ADDENDUM OF 1900, THE COMPOSITION OF WHICH HAS BEEN ALTERED	
LIST OF PREPARATIONS OF THE BRITISH PHARMACOPŒIA OF 1898 OR OF THE INDIAN AND COLONIAL ADDENDUM OF 1900, THE STRENGTHS OF WHICH HAVE BEEN ALTERED	
LIST OF DEVIATIONS FROM THE RECOMMENDATIONS OF THE BRUSSELS AGREEMENT	
THE BRITISH PHARMACOPŒIA	
APPENDICES	

CONTENTS

1931

1. The first part of the book is devoted to a general survey of the history of the subject.	1
2. The second part of the book is devoted to a detailed study of the various theories of the subject.	10
3. The third part of the book is devoted to a critical examination of the various theories of the subject.	25
4. The fourth part of the book is devoted to a study of the various methods of the subject.	40
5. The fifth part of the book is devoted to a study of the various results of the subject.	55
6. The sixth part of the book is devoted to a study of the various applications of the subject.	70
7. The seventh part of the book is devoted to a study of the various problems of the subject.	85
8. The eighth part of the book is devoted to a study of the various questions of the subject.	100
9. The ninth part of the book is devoted to a study of the various theories of the subject.	115
10. The tenth part of the book is devoted to a study of the various methods of the subject.	130
11. The eleventh part of the book is devoted to a study of the various results of the subject.	145
12. The twelfth part of the book is devoted to a study of the various applications of the subject.	160
13. The thirteenth part of the book is devoted to a study of the various problems of the subject.	175
14. The fourteenth part of the book is devoted to a study of the various questions of the subject.	190
15. The fifteenth part of the book is devoted to a study of the various theories of the subject.	205
16. The sixteenth part of the book is devoted to a study of the various methods of the subject.	220
17. The seventeenth part of the book is devoted to a study of the various results of the subject.	235
18. The eighteenth part of the book is devoted to a study of the various applications of the subject.	250
19. The nineteenth part of the book is devoted to a study of the various problems of the subject.	265
20. The twentieth part of the book is devoted to a study of the various questions of the subject.	280
21. The twenty-first part of the book is devoted to a study of the various theories of the subject.	295
22. The twenty-second part of the book is devoted to a study of the various methods of the subject.	310
23. The twenty-third part of the book is devoted to a study of the various results of the subject.	325
24. The twenty-fourth part of the book is devoted to a study of the various applications of the subject.	340
25. The twenty-fifth part of the book is devoted to a study of the various problems of the subject.	355
26. The twenty-sixth part of the book is devoted to a study of the various questions of the subject.	370
27. The twenty-seventh part of the book is devoted to a study of the various theories of the subject.	385
28. The twenty-eighth part of the book is devoted to a study of the various methods of the subject.	400
29. The twenty-ninth part of the book is devoted to a study of the various results of the subject.	415
30. The thirtieth part of the book is devoted to a study of the various applications of the subject.	430
31. The thirty-first part of the book is devoted to a study of the various problems of the subject.	445
32. The thirty-second part of the book is devoted to a study of the various questions of the subject.	460
33. The thirty-third part of the book is devoted to a study of the various theories of the subject.	475
34. The thirty-fourth part of the book is devoted to a study of the various methods of the subject.	490
35. The thirty-fifth part of the book is devoted to a study of the various results of the subject.	505
36. The thirty-sixth part of the book is devoted to a study of the various applications of the subject.	520
37. The thirty-seventh part of the book is devoted to a study of the various problems of the subject.	535
38. The thirty-eighth part of the book is devoted to a study of the various questions of the subject.	550
39. The thirty-ninth part of the book is devoted to a study of the various theories of the subject.	565
40. The fortieth part of the book is devoted to a study of the various methods of the subject.	580
41. The forty-first part of the book is devoted to a study of the various results of the subject.	595
42. The forty-second part of the book is devoted to a study of the various applications of the subject.	610
43. The forty-third part of the book is devoted to a study of the various problems of the subject.	625
44. The forty-fourth part of the book is devoted to a study of the various questions of the subject.	640
45. The forty-fifth part of the book is devoted to a study of the various theories of the subject.	655
46. The forty-sixth part of the book is devoted to a study of the various methods of the subject.	670
47. The forty-seventh part of the book is devoted to a study of the various results of the subject.	685
48. The forty-eighth part of the book is devoted to a study of the various applications of the subject.	700
49. The forty-ninth part of the book is devoted to a study of the various problems of the subject.	715
50. The fiftieth part of the book is devoted to a study of the various questions of the subject.	730

APPENDICES—(continued).

I	ARTICLES AND REAGENTS EMPLOYED IN CHEMICAL TESTING	
II	SOLUTIONS EMPLOYED IN CHEMICAL TESTING.	
III	SOLUTIONS EMPLOYED FOR VOLUMETRIC DETERMINATIONS	
	INDICATORS OF THE TERMINATIONS OF REACTIONS IN VOLUMETRIC DETERMINATIONS	
IV	REACTIONS AND TESTS FOR SUBSTANCES MENTIONED IN THE TEXT OF THE BRITISH PHARMACOPEIA	
V	QUANTITATIVE LIMIT TEST FOR LEAD	
VI	QUANTITATIVE LIMIT TEST FOR ARSENIC	
VII	DETERMINATION OF :	
	ACID VALUE OF FIXED OILS, FATS, WAXES AND RESINS	
	SAPONIFICATION VALUE OF FIXED OILS, FATS, WAXES AND RESINS	
	IODINE VALUE OF FIXED OILS AND FATS	
	UNSAAPONIFIABLE MATTER IN FIXED OILS AND FATS	
	ESTERS IN VOLATILE OILS.	
	ALKALOIDAL VALUE : LIMIT OF ERROR	
VIII	DETERMINATION OF :	
	MELTING POINTS	
	BOILING POINTS	
	REFRACTIVE INDICES.	
	OPTICAL ROTATION	
	SPECIFIC GRAVITY	
IX	PROCESSES FOR :	
	PERCOLATION	
	REPERCOLATION	
	MACERATION	
X	PROCESS FOR PREPARATION OF DISCS (LAMELLE)	
XI	PROCESSES FOR PREPARATION OF LOZENGES	
XII	ALTERNATIVE PROCESSES SANCTIONED FOR USE IN TROPICAL, SUBTROPICAL, AND OTHER PARTS OF THE BRITISH EMPIRE	

CONTENTS

xxx

APPENDICES—continued.

PAGE

XIII	TABLE OF PROPORTIONS RELATING TO THE PREPARATION OF DILUTED ALCOHOLS	
XIV	NAMES, SYMBOLS, AND ATOMIC WEIGHTS OF THE CHIEF ELEMENTARY BODIES MENTIONED IN THE PHARMACOPŒIA	
XV	WEIGHTS AND MEASURES OF THE PHARMACOPŒIA :	
	METRIC : MASS, CAPACITY, LENGTH	
	IMPERIAL : MASS, CAPACITY	
	RELATION OF VOLUME TO MASS	
	RELATION OF THE METRIC STANDARDS TO THE IMPERIAL STANDARDS	
	RELATION OF THE IMPERIAL STANDARDS TO THE METRIC STANDARDS	
XVI	TABLE OF APPROXIMATE EQUIVALENCES ADOPTED IN STATING DOSES (IMPERIAL AND METRIC) IN THE TEXT OF THE BRITISH PHARMACOPŒIA	
XVII	ABBREVIATED LATIN NAMES OF OFFICIAL DRUGS AND PREPARATIONS ADOPTED IN THE INDEX OF THE BRITISH PHARMACOPŒIA, AND COMMONLY USED IN WRITING PRESCRIPTIONS	
INDEX		

THE BRITISH PHARMACOPŒIA

Names of official substances defined in the text are printed with capital initial letters; words in the text which refer to articles, reagents and processes defined or described in an Appendix are printed in *italics*.

ACACIÆ CORTEX

Acacia Bark

Acacia Bark is the dried bark of *Acacia arabica*, *Willd.*, and also the dried bark of *Acacia decurrens*, *Willd.*; obtained from wild or cultivated trees not less than seven years old, and, after being dried, kept for one year before use.

Characters.—Bark of *Acacia arabica* hard and woody, rusty brown, and tending to divide into several layers. Outer surface of the older pieces covered with thick blackish periderm, rugged, fissured longitudinally and transversely. Inner surface red, longitudinally striated and fibrous. Taste astringent and mucilaginous.

Bark of *Acacia decurrens* usually in curved or channelled pieces, one and a half to three millimetres thick. External surface greyish brown, darkening with age; often with irregular longitudinal ridges, and, sometimes, transverse cracks. Inner surface reddish brown, longitudinally striated; fracture irregular and coarsely fibrous, freshly fractured surface pale. Slight tan-like odour; taste astringent.

ACACIÆ GUMMI

Gum Acacia

Gum Acacia is a gummy exudation from the stem and branches of *Acacia Senegal*, *Willd.*, and of other species of *Acacia*, *Willd.*

Characters and Tests.—In rounded or ovoid tears or

UNITED STATES OF AMERICA

DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

WATER RIGHTS

Section 1

The following is a list of the water rights which have been
located on the land described in the foregoing section.

1. A right of way for the purpose of conveying water from
the Colorado River to the land described in the foregoing section.

2. A right of way for the purpose of conveying water from
the Colorado River to the land described in the foregoing section.

3. A right of way for the purpose of conveying water from
the Colorado River to the land described in the foregoing section.

4. A right of way for the purpose of conveying water from
the Colorado River to the land described in the foregoing section.

5. A right of way for the purpose of conveying water from
the Colorado River to the land described in the foregoing section.

masses of various sizes, or in more or less angular fragments with glistening surfaces; nearly colourless or with a yellowish tint. Tears opaque from numerous minute fissures; very brittle, the fractured surface being vitreous in appearance. Nearly inodorous; taste bland and mucilaginous. Insoluble in *alcohol* (90 per cent.); almost entirely soluble in *water*, the solution being translucent, viscous, and slightly acid. When dissolved in an equal weight of *water*, the solution is not glairy, and after admixture with more *water*, yields no gummy deposit on standing. An aqueous solution (1 in 10) exhibits slight laevorotation (absence of dextrin, certain sugars, etc.). 10 millilitres of the same solution are not precipitated by *solution of lead acetate*; are not, after previous boiling and cooling, coloured blue or brown by 0.1 millilitre of *N/10 solution of iodine* (absence of starch and dextrin), or bluish-black by *T. Sol. of ferric chloride* (absence of tannin). Ash more than 4 per cent.

ACETANILIDUM

Acetanilide

Ex algin = Methyl-acetanilide.

Synonym—Phenyl-acetamide

Acetanilide, C_8H_9NO , may be obtained by the interaction of glacial acetic acid and aniline.

Characters and Tests.—Colourless, glistening lamellar crystals; inodorous; taste slightly pungent. Melting point 113° . Soluble in 210 parts of *water*, and in 4.2 parts of *alcohol* (90 per cent.); soluble in *ether*, and in *chloroform*. Heated with *solution of sodium hydroxide* the odour of aniline is given off, and if the liquid is then warmed with a few drops of *chloroform* the unpleasant odour of phenyl isocyanide is developed. An aqueous solution mixed with *solution of bromine* gives a yellowish-white precipitate (distinction from phenacetin). Forms a colourless solution with cold *sulphuric acid* or with cold *nitric acid*. A cold saturated aqueous solution does not affect *solution*

BRITISH PHARMACOPŒIA

3

of litmus (absence of free acid), and is not affected by *T. Sol.*
of ferric chloride (absence of phenazone, and salts of aniline).
Ash not more than 0·1 per cent.

Dose.

Metric.

12 to 30 centigrams.

Imperial.

2 to 5 grains.

ACETONUM

Acetone

Acetone, or dimethyl-ketone, C_3H_6O , may be obtained by the dry distillation of calcium acetate, or barium acetate.

Characters and Tests.—A colourless, transparent, mobile and volatile liquid. Characteristic odour; taste pungent and sweetish. Forms clear mixtures with *water*, *alcohol* (90 per cent.), *ether*, and *chloroform* in all proportions. Specific gravity 0·795 to 0·798. Not less than 95 per cent. distils between 55° and 57° . Leaves no residue when evaporated on a water-bath. 10 millilitres, to which a few drops of *solution of phenolphthalein* have been added, require not more than 1 drop of *N/1 solution of sodium hydroxide* to produce a permanent pink coloration. 20 millilitres do not completely decolorise 0·1 millilitre of *N/10 solution of potassium permanganate* within fifteen minutes (limit of readily oxidisable impurities). Yields a clear mixture with an equal volume of *petroleum spirit* (limit of water).

ACETUM CANTHARIDINI

Vinegar of Cantharidin

Cantharidin	1 gramme
Glacial Acetic Acid	200 millilitres
Acetic Acid sufficient to produce	2000 millilitres

Dissolve the Cantharidin in the Glacial Acetic Acid with

the aid of a water-bath; cool, and add sufficient Acetic Acid to produce the required volume.

This preparation is of approximately the same strength as the Acetum Cantharidis of the British Pharmacopœia, 1898.

ACETUM SCILLÆ

Vinegar of Squill

Squill, bruised	.	.	.	.	1000 grammes
Acetic Acid	.	.	.	.	1000 millilitres
Distilled Water	.	.	.	.	3200 millilitres

Macerate for seven days; press and filter.

Tests.—Specific gravity 1·070. 10 millilitres require for neutralisation not less than 10·8 millilitres of *N/1 solution of sodium hydroxide*.

Dose.

Metric.
3 to 10 decimils.

Imperial.
5 to 15 minims.

This preparation is approximately twice the strength of the Acetum Scillæ of the British Pharmacopœia, 1898.

ACETUM URGINEÆ

Vinegar of Urginea

Urginea, bruised	.	.	.	.	1000 grammes
Acetic Acid	.	.	.	.	1000 millilitres
Distilled Water	.	.	.	.	3200 millilitres

Macerate for seven days; press and filter.

Tests.—Specific gravity 1·070. 10 millilitres require for neutralisation not less than 10·8 millilitres of *N/1 solution of sodium hydroxide*.

*Dose.**Metric.*

3 to 10 decimils.

Imperial.

5 to 15 minims.

This preparation is approximately twice the strength of the Acetum Urgineæ of the Indian and Colonial Addendum, 1900.

ACIDUM ACETICUM

Acetic Acid

Acetic Acid may be obtained by the destructive distillation of wood, and contains 33 per cent. by weight of hydrogen acetate, $\text{HC}_2\text{H}_3\text{O}_2$, and 67 per cent. by weight of water.

Characters and Tests.—A clear, colourless liquid with pungent odour, yielding, when neutralised with an alkali, the reactions characteristic of acetates. Specific gravity 1.044. Yields no residue on evaporation, and no characteristic reactions for copper, chlorides, nitrates, sulphates, or sulphites. Does not immediately darken in colour when exactly neutralised with *solution of ammonia* and warmed with *solution of silver nitrate* (absence of formates). 5 millilitres require for neutralisation 28.7 millilitres of *N/1 solution of sodium hydroxide*. 2 millilitres do not completely decolorise a mixture of one drop of *solution of potassium permanganate* and 10 millilitres of *water* within half a minute (limit of empyreumatic matter). When tested for lead according to the quantitative method described in Appendix V, using 10 grammes in each Nessler glass, no difference in colour is observed on the addition of the *solution of sodium sulphide* to one of the solutions (absence of lead). *Arsenic limit* 2 parts per million.

ACIDUM ACETICUM DILUTUM**Diluted Acetic Acid**

Diluted Acetic Acid contains 5 per cent. by weight of hydrogen acetate, $\text{HC}_2\text{H}_3\text{O}_2$.

Acetic Acid 152.6 grammes

Distilled Water sufficient to produce 1000.0 millilitres

Mix.

Tests.—Specific gravity 1.007. 20 millilitres require for neutralisation 16.7 millilitres of *N/1 solution of sodium hydroxide*. Free from the impurities indicated under 'Acidum Aceticum.'

*Dose.**Metric.*

2 to 4 mils.

Imperial. $\frac{1}{2}$ to 1 fluid drachm.**ACIDUM ACETICUM GLACIALE****Glacial Acetic Acid**

Glacial Acetic Acid contains not less than 98.9 per cent. by weight of hydrogen acetate, $\text{HC}_2\text{H}_3\text{O}_2$.

Characters and Tests.—At summer temperatures (about 15° to 20°) it is a clear, colourless liquid with a very pungent odour. Yields, when neutralised, the *reactions* characteristic of acetates. Crystallises when sufficiently cooled, and does not entirely melt until the temperature rises above 14.7° . 1 gramme diluted with 50 millilitres of *water* requires for neutralisation not less than 32.9 millilitres of *N/2 solution of sodium hydroxide*. Leaves no residue on evaporation, and yields no characteristic *reactions* for lead, copper, arsenium, chlorides, nitrates, sulphates, or sulphites. Does not immediately darken in

colour when neutralised with *solution of ammonia* and warmed with *solution of silver nitrate* (absence of formates). 2 millilitres of Glacial Acetic Acid do not completely decolorise a mixture of three drops of *solution of potassium permanganate* and 10 millilitres of *water* within half a minute (limit of empyreumatic matter).

ACIDUM ACETYLSALICYLICUM

Acetylsalicylic Acid = *Aspirin*

Acetylsalicylic Acid, $C_9H_8O_4$, may be obtained by the action of acetic anhydride or of acetyl chloride on salicylic acid.

Characters and Tests.—A white, crystalline powder ; taste slightly acid. Sparingly soluble in *water* ; soluble in 5 parts of *alcohol* (90 per cent.) ; soluble in *ether*. Melting point from 133° to 135° . When 0.5 gramme is boiled for two or three minutes with 10 millilitres of *solution of sodium hydroxide* and to the cooled solution excess of *diluted sulphuric acid* is added, a crystalline precipitate is produced which, after washing and drying, responds to the tests described under 'Acidum Salicylicum' and the filtrate, after neutralisation, yields the *reactions* characteristic of acetates. When 0.5 gramme is shaken with 20 millilitres of *water* and 1 drop of *T. Sol. of ferric chloride* is added, no violet coloration is produced (absence of salicylic acid). *Lead limit* 10 parts per million. *Arsenic limit* 2 parts per million. No appreciable ash.

Dose.

Metric.
3 to 10 decigrams.

Imperial.
5 to 15 grains.

ACIDUM ARSENIOSUM

Arsenious Anhydride

Synonyms—Arsenic : Arsenious Acid

Arsenious Anhydride may be obtained by roasting

certain arsenical ores, and contains not less than 99·8 per cent. of arsenious oxide, As_2O_3 .

Characters and Tests.—A heavy white powder, or broken white lumps which have a vitreous fracture, and usually appear stratified. Very slowly soluble in 65 parts of *water*. Slowly heated in a test-tube it yields a sublimate of minute, brilliant, transparent, octahedral crystals. Its aqueous solution, which is odourless, tasteless, and faintly acid to *litmus*, gives with *solution of silver ammonio-nitrate* a canary-yellow precipitate readily dissolved by *solution of ammonia* and by *nitric acid*. Sprinkled on ignited charcoal, it emits an alliaceous odour. Entirely volatilised by heat. 0·1 gramme, dissolved in boiling *water* with the aid of a little *solution of sodium hydroxide*, the cooled solution being slightly acidified with *hydrochloric acid* and then made alkaline with excess of *sodium bicarbonate*, decolorises not less than 20·1 millilitres of *N/10 solution of iodine*. Dissolves completely in *solution of ammonia*, and the resulting liquid, when diluted with an equal volume of *water* and acidified with *hydrochloric acid*, is not yellow (absence of arsenious sulphide).

Dose.

Metric.

1 to 4 milligrams.

Imperial.

$\frac{1}{64}$ to $\frac{1}{16}$ grain.

ACIDUM BENZOICUM

Benzoic Acid

Benzoic Acid, $\text{HC}_7\text{H}_5\text{O}_2$, may be obtained from benzoin, or prepared synthetically.

Characters and Tests.—Light, feathery, crystalline plates and needles, flexible, nearly colourless and odourless when quite pure, but possessing an agreeable, aromatic odour when obtained from benzoin by sublimation. Soluble in 450 parts of *water*, in 3 of *alcohol* (90 per cent.), in 2·5 of *ether*,

and in 7 of *chloroform*. Melting point 121.5° , but if sublimed from benzoin about 120° . Heated in a dry test-tube it melts and sublimes leaving only a slight residue. Volatilises in the vapour of *water*. The solution obtained by gently warming 0.2 gramme with 20 millilitres of *water* and 1 millilitre of *N/1 solution of sodium hydroxide* and filtering yields a pale reddish precipitate with *T. Sol. of ferric chloride*. When 0.5 gramme is heated in a closed crucible with twice its weight of *calcium carbonate*, the mass dissolved in *diluted nitric acid*, and *solution of silver nitrate* added, not more than the slightest cloudiness results (absence of chlorobenzoic acid). Yields no characteristic *reactions* for oxalates. Does not develop the odour of benzaldehyde when warmed with its own weight of *potassium permanganate* and ten times its weight of *diluted sulphuric acid* (absence of cinnamic acid). *Arsenic limit* 2 parts per million.

Dose.

Metric.

3 to 10 decigrams.

Imperial.

5 to 15 grains.

ACIDUM BORICUM

Boric Acid

Synonym—Boracic Acid

Boric Acid may be obtained by the interaction of sulphuric acid and borax, and contains not less than 99.5 per cent. of orthoboric acid, H_3BO_3 .

Characters and Tests.—White, pearly lamellar crystals, or irregular masses of crystals, or crystalline powder; unctuous to the touch; taste feebly acid and bitter, leaving a sweetish after-taste. Soluble in 25 parts of *water*, in 4 of *glycerin*, and in 30 of *alcohol* (90 per cent.), the solutions being clear. *Turmeric paper* moistened with an aqueous solution slightly acidified with *hydrochloric acid* becomes

brownish-red on gently drying, and this colour, changes to a greenish-black on the addition of *solution of potassium hydroxide*. The alcoholic solution burns with a flame tinged with green. 1 gramme dissolved in a mixture of 25 millilitres of *water* and 20 millilitres of *glycerin* requires for neutralisation not less than 16.0 millilitres of *N/1 solution of sodium hydroxide*, *solution of phenolphthalein* being used as indicator. Yields no characteristic reactions for copper, and not more than the slightest reactions for iron, calcium, magnesium, chlorides, or sulphates. *Lead limit* 25 parts per million. *Arsenic limit* 5 parts per million.

Dose.

Metric.
3 to 10 decigrams.

Imperial.
5 to 15 grains.

ACIDUM CARBOLICUM

Phenol

Phenol, C_6H_5O , commonly termed carbolic acid, may be obtained from coal-tar oil.

Characters and Tests.—Small, colourless, deliquescent crystals; odour peculiar but not fetid or tarry; taste sweetish, pungent. Has a caustic action on skin and mucous membrane. Freely soluble in *alcohol* (90 per cent.), in *ether*, *chloroform*, *glycerin*, in the fixed and volatile oils, and in solutions of alkalies. Exposed to moist air it may acquire a pinkish tinge. At 15.5° , 100 parts of Phenol are liquefied by the addition of 10 parts of *water*, form a clear liquid with 30 to 40 parts of *water*, and are completely dissolved by 1,200 parts of *water*. The aqueous solution is clear and colourless. Melting point from 39° to 40° ; boiling point not higher than 183° . Specific gravity at the melting point 1.060 to 1.066. Phenol does not immediately redden *blue litmus* paper. Optically inactive. Coagulates *solution of albumen* and of *collodion*. An aqueous solution of Phenol

becomes deep purple with *T. Sol. of ferric chloride*; yields a white precipitate with excess of *solution of bromine*; and when mixed with one-fourth of its volume of *solution of ammonia*, and then with a few drops of *solution of chlorinated soda*, becomes blue after a time, or immediately on gently heating. One volume of Phenol liquefied by the addition of 10 per cent. of *water*, forms with 1 volume of *glycerin* a clear liquid which is not rendered turbid by the addition of 3 volumes of *water* (absence of cresol). Evaporated on a water-bath it leaves not more than 0.1 per cent. of residue.

Dose.

Metric.
6 to 20 centigrams.

Imperial.
1 to 3 grains.

ACIDUM CARBOLICUM LIQUEFACTUM

Liquefied Phenol

Synonym—Liquefied Carbolic Acid

Phenol	100 grammes
Distilled Water sufficient to produce .	<u>115 grammes</u>

Mix.

Characters and Tests.—A liquid, at first colourless, but usually acquiring a pinkish hue. Forms a clear solution on the addition of 12 to 20 per cent. of *water* at 15.5°. Specific gravity 1.067 to 1.069. Boiling point gradually rising to a temperature not higher than 183°.

Dose.

Metric.
6 to 18 centimils.

Imperial.
1 to 3 minims.

ACIDUM CHROMICUM**Chromic Anhydride**

Synonym—Chromic Acid

Chromic Anhydride, CrO_3 , may be obtained by the interaction of sulphuric acid and potassium bichromate. It should be preserved in well-stoppered bottles.

Characters and Tests.—Crimson acicular crystals, very deliquescent, inodorous, acting corrosively on the skin. Very soluble in *water* and in *ether*. Strongly heated it first melts and then evolves oxygen, leaving, after heating to redness, a green residue, which yields little or nothing to *water*. Warmed with *hydrochloric acid*, chlorine is evolved. In contact with relatively small proportions of *alcohol* (90 per cent.), *ether*, *glycerin*, or certain other organic substances, sudden combustion or explosion may ensue. When 4 grammes are dissolved in a mixture of 20 millilitres of *water* with 10 millilitres of *hydrochloric acid*, 5 millilitres of *solution of barium chloride* added and the mixture filtered, the filtrate yields no further precipitate on the addition of more of the reagent (limit of sulphates).

ACIDUM CITRICUM**Citric Acid**

Citric Acid may be obtained from the juice of the fruit of various species of *Citrus*, and contains not less than 99·5 per cent. of hydrogen citrate, $\text{H}_3\text{C}_6\text{H}_5\text{O}_7, \text{H}_2\text{O}$.

Characters and Tests.—Large colourless prisms; taste strongly acid. Soluble in about 0·5 part of *water*, somewhat less soluble in *alcohol* (90 per cent.), and slightly soluble in *ether*. Yields, when neutralised, the *reactions* characteristic of citrates. 1 gramme dissolved in *water* requires for neutralisation 14·2 millilitres of *N/1 solution of sodium hydroxide*. Yields no characteristic

reactions for copper or iron, and not more than very slight *reactions* for calcium or sulphates. *Lead limit* 5 parts per million. *Arsenic limit* 1·4 parts per million. 1 gramme of powdered Citric Acid mixed with 10 millilitres of *sulphuric acid* in a test-tube previously rinsed with *sulphuric acid* acquires not more than a pale yellow colour when kept at a temperature of 90° for one hour (absence of tartaric acid). Ash not more than 0·05 per cent.

Dose.

Metric.

3 to 12 decigrams.

Imperial.

5 to 20 grains.

ACIDUM HYDRIODICUM DILUTUM

Diluted Hydriodic Acid

Diluted Hydriodic Acid is an aqueous liquid containing when freshly prepared 10 per cent. by weight of hydrogen iodide, HI, and 1 per cent. by weight of hydrogen hypophosphite, $\text{H}_2\text{P}_2\text{O}_4$. It may be obtained by the action of hydrogen sulphide on a solution of iodine and the subsequent addition of hydrogen hypophosphite.

Characters and Tests.—A clear, colourless liquid. Yields, when neutralised, the *reactions* characteristic of iodides. Yields no characteristic *reactions* for barium, calcium, potassium, sulphates, or sulphides. When to 5 grammes of the Acid, diluted with a little *water*, 45 millilitres of *N/10 solution of silver nitrate*, 5 millilitres of *nitric acid*, and 0·5 millilitre of *solution of ferric sulphate* are added, not less than 5 or more than 7 millilitres of *N/10 solution of ammonium thiocyanate* are required to produce a per-

manent pink coloration. *Lead limit* 10 parts per million.
Arsenic limit 5 parts per million.

Dose.

Metric.
3 to 6 decimils.

Imperial.
5 to 10 minims.

ACIDUM HYDROBROMICUM DILUTUM

Diluted Hydrobromic Acid

Diluted Hydrobromic Acid is an aqueous liquid containing 10 per cent. by weight of hydrogen bromide, HBr. It may be obtained by the interaction of bromine and sulphurous acid and subsequent distillation.

Characters and Tests.—Clear, colourless, and inodorous. Yields, when neutralised, the *reactions* characteristic of bromides. Specific gravity 1·077. 10 millilitres require for neutralisation 13·3 millilitres of *N/1 solution of sodium hydroxide*. 2 millilitres require, for complete precipitation, 26·6 millilitres of *N/10 solution of silver nitrate*. Yields no characteristic *reactions* for barium, chlorides, phosphates or sulphites, and only a slight *reaction* for sulphates. *Lead limit* 5 parts per million. *Arsenic limit* 5 parts per million. Leaves not more than 0·01 per cent. of residue on evaporation.

Dose.

Metric.
1 to 4 mils.

Imperial.
15 to 60 minims.

ACIDUM HYDROCHLORICUM

Hydrochloric Acid

Hydrochloric Acid is a liquid containing 31·79 per cent. by weight of hydrogen chloride, HCl, and 68·21 per cent. by weight of water. It may be obtained by dissolving in

water the gas produced by the interaction of sulphuric acid and sodium chloride.

Characters and Tests.—Colourless and strongly acid, emitting white, pungent fumes. Yields, when neutralised, the *reactions* characteristic of chlorides. Specific gravity 1·160. 5 millilitres, diluted with *water*, require for neutralisation 50·6 millilitres of *N/1 solution of sodium hydroxide*. When diluted with *water* yields no characteristic *reactions* for bromides, iodides, sulphates, or sulphites, and only slight *reactions* for iron. Diluted with *water* and *solution of potassium iodide* added, no blue colour is produced on the addition of *mucilage of starch* (absence of free chlorine). *Lead limit* 10 parts per million. *Arsenic limit* 5 parts per million. Leaves not more than 0·01 per cent. of residue on evaporation.

ACIDUM HYDROCHLORICUM DILUTUM

Diluted Hydrochloric Acid

Diluted Hydrochloric Acid contains 10 per cent. by weight of hydrogen chloride, HCl.

Hydrochloric Acid	330 grammes
Distilled Water sufficient to produce	1000 millilitres

Mix.

Tests.—Yields, when neutralised, the *reactions* characteristic of chlorides. Specific gravity 1·048. 10 millilitres require for neutralisation 28·7 millilitres of *N/1 solution of sodium hydroxide*. Free from the impurities mentioned under 'Acidum Hydrochloricum.'

Dose.

Metric.
3 to 12 decimils.

Imperial.
5 to 20 minims.

ACIDUM HYDROCYANICUM DILUTUM**Diluted Hydrocyanic Acid**

Synonym—Dilute Prussic Acid

Diluted Hydrocyanic Acid is an aqueous solution containing 2 per cent. by weight of hydrogen cyanide, HCN . It may be obtained by the interaction of diluted sulphuric acid and potassium ferrocyanide and subsequent distillation. Should be stored in a dark place, in small, inverted stoppered bottles of amber-coloured glass.

Characters and Tests.—A colourless liquid with a characteristic odour. Specific gravity 0.997. Only slightly acid to *litmus*. Yields, when neutralised, the *reactions* characteristic of cyanides. 5 millilitres, mixed with 50 millilitres of water, 5 millilitres of *solution of ammonia* and 3 drops of *solution of potassium iodide*, require the addition of not less than 18.4 and not more than 19 millilitres of *N/10 solution of silver nitrate* before a permanent precipitate begins to form. 5 millilitres evaporated in a platinum dish leave no appreciable residue. Yields not more than the slightest characteristic *reactions* for sulphates or chlorides.

Dose.

Metric.
12 to 30 centimils.

Imperial.
2 to 5 minims.

ACIDUM LACTICUM**Lactic Acid**

Lactic Acid is an aqueous solution containing not less than 75 per cent. by weight of hydrogen lactate, $\text{HC}_3\text{H}_5\text{O}_3$, and not less than 10 per cent. by weight of lactide, $\text{C}_6\text{H}_8\text{O}_4$. It may be obtained by the fermentation of lactose.

Characters and Tests.—Colourless, syrupy, hygroscopic, inodorous; acid to *litmus*. Miscible in all proportions with *water*, *alcohol* (90 per cent.), and *ether*; nearly insoluble in *chloroform*. Specific gravity about 1.21. Warmed with one-tenth of its weight of *potassium permanganate* it yields the odour of aldehyde. 1 gramme diluted with 10 millilitres of *water* requires for neutralisation not less than 8.3 millilitres of *N/1 solution of sodium hydroxide*. After the further addition of 10 millilitres of the alkaline solution and boiling for fifteen minutes, not more than 8.8 millilitres of *N/1 solution of sulphuric acid* are required to neutralise the excess of alkali. Yields no characteristic reactions for copper, iron, chlorides, citrates, oxalates, phosphates, sulphates, or tartrates. *Lead limit* 10 parts per million. *Arsenic limit* 5 parts per million. Diluted with *water* gives no precipitate with *solution of copper sulphate* (absence of sarco-lactic acid), and none, or only the slightest traces, with excess of *solution of potassio-cupric tartrate*, even after prolonged boiling (absence of more than traces of various sugars). The mixture obtained by heating Lactic Acid with excess of *zinc carbonate* and evaporating to dryness, when exhausted with *absolute alcohol* and the latter evaporated, does not leave any sweet residue (absence of glycerin). Yields no rancid odour when gently warmed (absence of fatty acids). When carefully poured upon an equal volume of *sulphuric acid* contained in a clean test-tube, little or no darkening in colour occurs (absence of organic impurities). No turbidity, either permanent or transient, is produced when the Acid is added drop by drop to twice its volume of *ether* (absence of gum, sugars, mannite, calcium phosphate). Yields no precipitate with *solution of lead subacetate* (absence of malic and sulphuric acids). ✓

Dose.

Metric.

1 to 2 mils.

Imperial.

15 to 30 minims.

ACIDUM NITRICUM

Nitric Acid

Nitric Acid contains 70 per cent. by weight of hydrogen nitrate, HNO_3 , and 30 per cent. by weight of water. It may be obtained by the interaction of sulphuric acid and sodium nitrate.

Characters and Tests.—A clear, colourless, or almost colourless liquid emitting corrosive fumes. Yields, when neutralised, the *reactions* characteristic of nitrates. Specific gravity 1.42. 1 gramme diluted with *water* requires for neutralisation 11.1 millilitres of *N/1 solution of sodium hydroxide*. When diluted with *water* yields no characteristic *reactions* for copper, iron, chlorides, bromates, iodates, or sulphates. *Lead limit* 20 parts per million. *Arsenic limit* 5 parts per million. Leaves not more than 0.05 per cent. of residue on evaporation.

ACIDUM NITRICUM DILUTUM

Diluted Nitric Acid

Diluted Nitric Acid contains 10 per cent. by weight of hydrogen nitrate, HNO_3 :

Nitric Acid	151 grammes
Distilled Water sufficient to produce	1000 millilitres

Mix.

Tests.—Specific gravity 1.057: 10 millilitres require for neutralisation 16.8 millilitres of *N/1 solution of sodium hydroxide*.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
3 to 12 decimils.	5 to 20 minims.

This Diluted Acid is of approximately three-fifths the strength of the corresponding preparation of the British Pharmacopœia, 1898, and contains 10 per cent. by weight of hydrogen nitrate, HNO_3 .

*

**ACIDUM NITRO-HYDROCHLORICUM
DILUTUM****Diluted Nitro-hydrochloric Acid**

Nitric Acid	60 millilitres
Hydrochloric Acid	80 millilitres
Distilled Water	500 millilitres

Mix the Acids with the Distilled Water, and keep the mixture in a glass-stoppered bottle for fourteen days before use.

Tests.—Specific gravity 1·07. 10 millilitres require for neutralisation about 26·6 millilitres of *N/1 solution of sodium hydroxide*.

Dose.

Metric.
3 to 12 decimils.

Imperial.
5 to 20 minims.

ACIDUM OLEICUM**Oleic Acid**

Oleic Acid may be obtained by the saponifying action of alkalies and subsequent action of acids, or by the action of superheated steam, upon commercial oleins.

Characters and Tests.—A straw-coloured liquid, occasionally with a faintly rancid smell. Insoluble in *water*, but readily soluble in *alcohol* (90 per cent.), in *chloroform*, or in *ether*. When cooled it does not become semi-solid until the temperature has fallen below 9°. Specific gravity 0·890 to 0·910.

**ACIDUM PHOSPHORICUM
CONCENTRATUM****Concentrated Phosphoric Acid**

Concentrated Phosphoric Acid is a liquid containing 66·3 per cent. by weight of hydrogen orthophosphate, H_3PO_4 , and 33·7 per cent. by weight of water. It may be obtained by the oxidation of phosphorus.

Characters and Tests.—A colourless, syrupy liquid with an acid taste and reaction. Leaves, on evaporation, a residue which melts at a low red heat, and when cold forms a glass-like mass. Yields, when neutralised, the *reactions* characteristic of phosphates. Specific gravity 1·5. 1 gramme mixed with a solution of 5 grammes of *sodium chloride* in 20 millilitres of *water* requires for neutralisation 13·5 millilitres of *N/1 solution of sodium hydroxide, solution of phenolphthalein* being used as indicator. Yields when diluted with *water* no characteristic *reactions* for copper, calcium, chlorides, or nitrates, and not more than slight *reactions* with the tests for iron or sulphates. *Lead limit* 10 parts per million. *Arsenic limit* 5 parts per million.

ACIDUM PHOSPHORICUM DILUTUM**Diluted Phosphoric Acid**

Diluted Phosphoric Acid contains 10 per cent. by weight of hydrogen orthophosphate, H_3PO_4 .

Concentrated Phosphoric Acid . . . 159·5 grammes

Distilled Water sufficient to produce 1000·0 millilitres

Mix.

Tests.—Specific gravity 1·057. 10 millilitres mixed with a solution of 5 grammes of *sodium chloride* in 20

**ACIDUM PHOSPHORICUM
CONCENTRATUM****Concentrated Phosphoric Acid**

Concentrated Phosphoric Acid is a liquid containing 66·3 per cent. by weight of hydrogen orthophosphate, H_3PO_4 , and 33·7 per cent. by weight of water. It may be obtained by the oxidation of phosphorus.

Characters and Tests.—A colourless, syrupy liquid with an acid taste and reaction. Leaves, on evaporation, a residue which melts at a low red heat, and when cold forms a glass-like mass. Yields, when neutralised, the *reactions* characteristic of phosphates. Specific gravity 1·5. 1 gramme mixed with a solution of 5 grammes of *sodium chloride* in 20 millilitres of *water* requires for neutralisation 13·5 millilitres of *N/1 solution of sodium hydroxide, solution of phenolphthalein* being used as indicator. Yields when diluted with *water* no characteristic *reactions* for copper, calcium, chlorides, or nitrates, and not more than slight *reactions* with the tests for iron or sulphates. *Lead limit* 10 parts per million. *Arsenic limit* 5 parts per million.

ACIDUM PHOSPHORICUM DILUTUM**Diluted Phosphoric Acid**

Diluted Phosphoric Acid contains 10 per cent. by weight of hydrogen orthophosphate, H_3PO_4 .

Concentrated Phosphoric Acid	. 159·5 grammes
Distilled Water sufficient to produce	. 1000·0 millilitres

Mix.

Tests.—Specific gravity 1·057. 10 millilitres mixed with a solution of 5 grammes of *sodium chloride* in 20

millilitres of *water* require for neutralisation 21·6 millilitres of *N/1 solution of sodium hydroxide, solution of phenolphthalein* being used as indicator.

	<i>Dose.</i>	
<i>Metric.</i>		<i>Imperial.</i>
3 to 12 decimils.		5 to 20 minims.

ACIDUM PICRICUM

Picric Acid

Synonym—Carbazotic Acid

Picric Acid may be obtained by the action of nitric acid and sulphuric acid on phenol, and contains not less than 99 per cent. of tri-nitro-phenol, $C_6H_2(NO_2)_3OH$.

Characters and Tests.—Bright yellow crystalline powder. Inodorous; taste very bitter. Soluble in 90 parts of *water*, and in 10 parts of *alcohol* (90 per cent.), forming intensely yellow solutions which stain the skin yellow. Melting point 122° . 2 grammes dissolved in hot *water* require for neutralisation 17·3 millilitres of *N/2 solution of sodium hydroxide, solution of phenolphthalein* being used as indicator.

ACIDUM SALICYLICUM

Salicylic Acid

Salicylic Acid, $HC_7H_5O_3$, may be obtained from natural salicylates such as the oils of wintergreen (*Gaultheria procumbens*, *Linn.*) and sweet-birch (*Betula lenta*, *Linn.*), or by the interaction of sodium phenate and carbon dioxide.

Characters and Tests.—Distinct, prismatic, colourless crystals. Taste at first sweetish, then acid, leaving a burning sensation in the throat. Soluble in about 500 parts of *water*, in 3·5 of *alcohol* (90 per cent.), or in 2 of *ether*. Melting point 156° to 157° . Carefully heated it volatilises without decomposition. Dissolves in *solution of ammonium acetate*, and in *solution of sodium phosphate*. *T.Sol. of ferric chloride* gives with the aqueous solution a violet colour, or, if the solution be largely diluted, a reddish-violet colour. Shaken with a small proportion of *water*, the mixture filtered, and the solution evaporated, there remains a white residue, having no buff-tinted fringe (absence of iron, organic impurities, and colouring matter). Salicylic Acid dissolves in cold *sulphuric acid*, imparting to the liquid not more than a faint brownish tint in fifteen minutes (absence of certain organic impurities). When 1 gramme of the Acid is dissolved in an excess of cold *solution of sodium carbonate*, the liquid shaken with an equal volume of *ether*, and the ethereal solution allowed to evaporate spontaneously, the residue, if any, is free from the odour of phenol (absence of phenol). *Arsenic limit* 2 parts per million. No appreciable ash.

Dose.

Metric.

3 to 12 decigrams.

Imperial.

5 to 20 grains.

ACIDUM SULPHURICUM

Sulphuric Acid

Sulphuric Acid may be obtained by the combustion of sulphur or pyrites and the oxidation and hydration of the resulting sulphur dioxide by means of nitrous and aqueous vapours, and contains not less than 95 per cent. by weight of hydrogen sulphate, H_2SO_4 .

Characters and Tests.—A colourless, corrosive, intensely acid liquid of oily consistence, evolving much heat on the addition of *water*. Yields, when neutralised, the *reactions* characteristic of sulphates. Specific gravity about 1·841. 1 gramme diluted with 20 or 30 millilitres of *water* requires for neutralisation not less than 19·3 millilitres of *N/1 solution of sodium hydroxide*. Yields no characteristic *reactions* for copper, iron, ammonium, chlorides, nitrates, nitrites, or sulphites. *Lead limit* 20 parts per million. *Arsenic limit* 5 parts per million. *Hydrochloric acid* to which *sodium sulphite* has been added, when poured carefully upon an equal volume of Sulphuric Acid contained in a test-tube, does not cause a red coloration at the junction of the two liquids, and no red precipitate forms on warming the tube (absence of selenium). Leaves not more than 0·05 per cent. of solid residue on evaporation.

ACIDUM SULPHURICUM AROMATICUM

Aromatic Sulphuric Acid

Tincture of Ginger	. . .	250 millilitres
Spirit of Cinnamon	. . .	15 millilitres
Sulphuric Acid	. . .	70 millilitres
Alcohol (90 per cent.) sufficient to produce	. . .	1000 millilitres

Mix the Sulphuric Acid gradually with six hundred millilitres of the Alcohol; cool to 15·5°; add the Spirit of Cinnamon and Tincture of Ginger and sufficient of the Alcohol to produce the required volume.

Tests.—Specific gravity 0·917 to 0·923. 10 millilitres require for neutralisation not less than 24·9 millilitres of *N/1 solution of sodium hydroxide*.

Dose.

Metric.
3 to 12 decimils.

Imperial.
5 to 20 minims.

ACIDUM SULPHURICUM DILUTUM**Diluted Sulphuric Acid**

Diluted Sulphuric Acid contains 10 per cent. by weight of hydrogen sulphate, H_2SO_4 .

Sulphuric Acid	112.5 grammes
Distilled Water	940.0 millilitres
or a sufficient quantity	

Add the Sulphuric Acid very gradually to one-half of the Distilled Water contained in a glass flask ; cool to 15.5° and add sufficient Distilled Water to make the resulting liquid respond to the following tests.

Tests.—Specific gravity 1.069. 10 millilitres require for neutralisation 21.7 millilitres of *N/1 solution of sodium hydroxide*.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
3 to 12 decimils.	5 to 20 minims.

ACIDUM SULPHUROSUM**Sulphurous Acid**

Sulphurous Acid is an aqueous solution containing 6.4 per cent. by weight of hydrogen sulphite, H_2SO_3 , corresponding to 5 per cent. by weight of sulphur dioxide, SO_2 . The sulphur dioxide may be obtained by heating sulphuric acid with charcoal or sulphur.

Characters and Tests.—A colourless liquid with a pungent, sulphurous odour. Yields, when neutralised, the *reactions* characteristic of sulphites. Yields not more than a

slight precipitate with *solution of barium chloride* (limit of sulphates), but a copious precipitate if *solution of chlorine* is also added. Leaves no appreciable residue on evaporation. Specific gravity 1.025. 1 gramme, diluted with 100 millilitres of recently boiled and cooled *water*, requires 15.5 millilitres of *N/10 solution of iodine* for complete oxidation, *mucilage of starch* being used as indicator. *Lead limit* 10 parts per million. *Arsenic limit* 5 parts per million.

Dose.

Metric.
2 to 4 mils.

Imperial.
 $\frac{1}{2}$ to 1 fluid drachm.

ACIDUM TANNICUM

Tannic Acid

Synonym—Tannin

Tannic Acid, $C_{14}H_{10}O_9$, may be extracted by water-saturated ether from galls which have been subjected to a special fermentation.

Characters and Tests.—A light brownish powder consisting of thin glistening scales. Characteristic odour; taste strongly astringent. Reaction acid. Soluble in 1 part of *water* or of *alcohol* (90 per cent.), and, slowly, in 1 part of *glycerin*. It is precipitated from an aqueous solution by many mineral salts and acids. The aqueous solution precipitates *solutions of isinglass, albumen, alkaloïds, and tartarated antimony*, and gives with *T.Sol. of ferric chloride* a bluish-black colour. Ash not more than 0.2 per cent.

Dose.

Metric.
3 to 6 decigrams.

Imperial.
5 to 10 grains.

ACIDUM TARTARICUM

Tartaric Acid

Tartaric Acid may be obtained from acid potassium tartrate, and contains not less than 99 per cent. of hydrogen tartrate, $\text{H}_2\text{C}_4\text{H}_4\text{O}_6$.

Characters and Tests.—Colourless monoclinic prisms; taste strongly acid. Soluble in less than 1 part of *water*, and in 3 parts of *alcohol* (90 per cent.). Yields, when neutralised, the *reactions* characteristic of tartrates. An aqueous solution is dextrorotatory. 1 gramme dissolved in *water* requires for neutralisation not less than 13.2 millilitres of *N/1 solution of sodium hydroxide*. Yields no characteristic *reactions* for copper, iron, or oxalates, and not more than the slightest *reactions* with the tests for calcium. *Lead limit* 10 parts per million. *Arsenic limit* 1.4 parts per million. 1 gramme dissolved in 50 millilitres of *water*, on addition of 0.5 millilitre of *solution of barium chloride*, does not yield a greater opalescence than 1 millilitre of *N/100 solution of sulphuric acid* when precipitated under the same conditions (limit of sulphates). Ash not more than 0.1 per cent.

*Dose.**Metric.*

3 to 12 decigrams.

Imperial.

5 to 20 grains.

ACONITI RADIX

Aconite Root

Aconite Root is the dried root of *Aconitum Napellus*, *Linn.*

Characters and Tests.—From four to ten centimetres

long, and from one to two centimetres wide at the upper extremity. Conical, dark brown, with numerous root scars, and crowned with the base of the stem or the remains of a bud. Internally solid and starchy. In transverse section a stellate cambium with small vascular bundles at the projecting angles; primary cortex narrow, with isolated thick walled sclerenchymatous cells; cells of parenchymatous tissue contain numerous small simple or compound starch grains. No marked odour; taste at first slight, followed by persistent sensation of tingling and numbness. Yields not less than 0.40 per cent. of ether-soluble alkaloids when assayed by the following process:—

Into a small stoppered glass percolator, provided with a glass tap and suitably plugged with cotton wool, introduce 10 grammes of Aconite Root in No. 40 powder and 75 millilitres of *alcohol* (70 per cent.). Macerate for four hours, shaking occasionally. Then allow percolation to proceed slowly until the liquid ceases to drop. Continue the percolation by the addition of more of the same menstruum until 150 millilitres have been collected or the Root is exhausted. Evaporate the percolate to dryness in a shallow porcelain evaporating basin, at a temperature not exceeding 60°. Dissolve the residue in 5 millilitres of *N/10 solution of sulphuric acid* diluted with 20 millilitres of *water*. Filter into a separating funnel, washing the dish and filter with about 30 millilitres of *water*. Add to the mixed filtrate and washings 25 millilitres of *ether* and 2 millilitres of *solution of ammonia*, and shake for one minute. After separation draw off the lower layer into a flask, and filter the ethereal solution into a beaker. Return the contents of the flask to the separator, add 20 millilitres of *ether* and again shake for one minute, separating the aqueous liquid and filtering the ethereal solution into the beaker. Repeat the operation with two other portions, each of 20 millilitres, of *ether*. Evaporate the mixed ethereal solutions to dryness, dry the residue at 60°, dissolve it in 5 millilitres of *N/20 solution of sulphuric acid* diluted with 20 millilitres of *water*, and titrate back with *N/20 solution of sodium hydroxide*, *tincture of cochineal* being used as indicator. Deduct the

number of millilitres of the alkaline solution required from 5, multiply the difference by 0.3217; the result will be the percentage of ether-soluble alkaloids in the powdered Root.

ACONITINA

Aconitine

Aconitine, $C_{34}H_{45}NO_{11}$, is an alkaloid obtained from Aconite Root.

Characters and Tests.—Colourless, transparent, hexagonal crystals belonging to the rhombic system, prismatic and tabular. Melting point 198° , at which temperature evolution of acetic acid occurs. Almost insoluble in *water*, *petroleum spirit*, and *carbon disulphide*; readily soluble in *benzene* and in *chloroform*, less readily in *ether* and in *absolute alcohol*. Forms a crystalline hydrochloride which melts at 149° . An aqueous solution (1 in 10,000) placed upon the tongue produces a characteristic tingling and numbing sensation. An aqueous solution, not more dilute than 1 in 4,000, faintly acidified with *acetic acid*, yields a reddish precipitate on the addition of a few drops of *N/10 solution of potassium permanganate*. The ethereal solution obtained by boiling Aconitine with *N/2 alcoholic solution of potassium hydroxide*, removing most of the alcohol by evaporation, diluting with *water*, acidifying and extracting with *ether*, leaves on evaporation a crystalline residue of benzoic acid. When 0.0002 gramme of Aconitine is gently warmed with 4 drops of *sulphuric acid* an odour of benzoic acid is evolved, and if after five minutes a few crystals of *resorcin* are added and the heat continued, a reddish-yellow colour, changing to intense red, is produced. No appreciable ash.

ADEPS BENZOATUS

Benzoated Lard

Prepared Lard	1000 grammes
Benzoin, in coarse powder	30 grammes

Melt the Lard, add the Benzoin, and maintain at a temperature of 60° for one hour, stirring frequently; strain, and stir until nearly cold.

In India, Benzoated Suet (*Sevum Benzoatum*) should be employed in making the official preparations for which Benzoated Lard is directed to be used.

ADEPS LANÆ

Wool Fat

Synonym—Anhydrous Lanolin

Wool Fat is the purified fat of sheep's wool, freed from water.

Characters and Tests.—A yellowish, tenacious, unctuous substance. Almost inodorous. Melting point about 40°. When a solution of 0·1 gramme in a mixture of 5 millilitres of *chloroform* and 0·5 millilitre of *acetic anhydride* is gently poured upon the surface of 5 millilitres of *sulphuric acid* in a test-tube, a purplish-brown ring, the upper layer of which gradually becomes green, is developed at the point of contact (presence of cholesterol). A solution of 0·2 gramme in 10 millilitres of *ether* remains colourless on the addition of 2 drops of *solution of phenolphthalein* (absence of free alkali), but becomes deep red on the addition of 1 drop of *N/1 solution of sodium hydroxide* (limit of free acid). Heated with *solution of sodium hydroxide* no ammoniacal odour is evolved (absence of organic nitrogenous matter). Ash not more than 0·3 per cent.

ADEPS LANÆ HYDROSUS

Hydrous Wool Fat

Synonym—Lanolin

Wool Fat		70 grammes
Distilled Water		30 millilitres

Mix.

Tests.—10 grammes heated on a water-bath, with stirring, until the weight is constant, yield not less than 7 grammes of a residue which answers to the tests described under 'Adeps Lanæ.'

ADEPS PRÆPARATUS

Prepared Lard

Prepared Lard is the purified internal fat of the hog, *Sus scrofa*, Linn.

Characters and Tests.—A soft, white, homogeneous, unctuous substance. Odour faint but not rancid. Entirely soluble in *ether*. *Acid value* not more than 1·2; *saponification value* 192 to 198; *iodine value* 52 to 63; *unsaponifiable matter* not more than 0·5 per cent.; *refractive index* at 60° 1·4530 to 1·4550. Forms on melting a clear liquid which does not deposit water on standing. *Water* boiled with it does not acquire an alkaline reaction (absence of alkalies), and, after filtering and acidifying with *nitric acid*, does not yield any reaction with *solution of silver nitrate* (absence of chlorides). When a mixture of 20 millilitres of melted and filtered Lard with 10 millilitres of *hydrochloric acid* containing 1 per cent. of *refined sugar* is shaken for half a minute and allowed to stand, the acid layer does not become pink (absence of sesame oil).

In India, Prepared Suet (*Sevum Præparatum*) should be employed in making the official preparations for which Prepared Lard is directed to be used.

ADRENALINUM

Adrenalin

Adrenalin, or lævo-methylamino-ethanol-catechol, $C_9H_{13}NO_3$, may be obtained from the suprarenal glands of animals.

Characters and Tests.—A light-brown, or nearly white, micro-crystalline powder. Very slightly soluble in *water*; almost insoluble in *alcohol* (90 per cent.), in *ether*, and in *chloroform*. Combines with acids to form salts which are readily soluble in *water* and in *alcohol* (90 per cent.). Melts, with partial decomposition, between 205° and 212° . Alkaline to moistened *litmus paper*. A dilute, slightly acid solution gives with a trace of *ferric chloride* an emerald-green colour which is changed to purple or carmine by the cautious addition of a dilute solution of *sodium hydroxide*; readily reduces *solution of auric chloride*; gradually develops a characteristic unpleasant odour when a small quantity is mixed with five times its volume of *solution of sodium hydroxide*; yields no precipitate with *solution of potassio-mercuric iodide* (absence of most alkaloids). No appreciable ash.

ÆTHER

Ether

Ether, also known as ethylic ether, $C_4H_{10}O$, may be obtained by distilling a mixture of ethylic alcohol or industrial methylated spirit and sulphuric acid, and rectifying the distillate. It should be preserved in a cool dark place.

Characters and Tests.—A colourless, very volatile and inflammable liquid. Odour and taste strong and characteristic. Slightly soluble in *water*; miscible in all proportions with *alcohol* (90 per cent.), *chloroform*, and fixed and volatile oils. Specific gravity 0.720. Boiling point from 34° to 36° .

RELATIVITY

1905

On the Electrodynamics of Moving Bodies

Annalen der Physik, 17, 89-105 (1905)

On the Theory of the Brownian Movement

RELATIVITY

1905

On the Electrodynamics of Moving Bodies

Annalen der Physik, 17, 89-105 (1905)

Its vapour mixed with air is explosive in contact with flame. 5 millilitres, on spontaneous evaporation in a glass dish, leave a film of moisture which does not redden or bleach blue *litmus paper* (absence of free acid, sulphurous acid).

Dose.

<i>Metric.</i>	<i>Imperial.</i>
1 to 2 mls (repeated).	15 to 30 minims (repeated).
3 to 4 mls (single).	45 to 60 minims (single).

ÆTHER ACETICUS

Acetic Ether

Acetic Ether is a liquid obtained by distilling a mixture of ethylic alcohol, acetic acid, and sulphuric acid, and purifying the product. It contains not less than 90 per cent. of ethyl acetate, $C_2H_5C_2H_3O_2$.

Characters and Tests.—A colourless liquid with a fragrant odour. Soluble in all proportions in *alcohol* (90 per cent.), in *ether* and in *chloroform*, and in not less than 11 parts of *water*. Specific gravity 0.900 to 0.907. Moistened blue *litmus paper* introduced into it is not immediately reddened. A little allowed to evaporate from filter paper leaves no extraneous odour. When carefully poured over *sulphuric acid* no dark ring is formed within fifteen minutes at the point of contact. Contains not less than 90 per cent. of ethyl acetate as determined by the following process:—

Introduce about 5 grammes into a tared stoppered flask, weigh, and make up to 100 millilitres with *water*. Transfer 10 millilitres of this solution to a titration flask and neutralise with *N/1 solution of sodium hydroxide*, *solution of phenolphthalein* being used as indicator. Then add 20 millilitres of the alkaline solution, set aside for five minutes, rotating occasionally, dilute with *water* and titrate back with *N/1 solution of sulphuric acid*. Deduct from 20 the

number of millilitres of the acid solution required. Each millilitre of the difference corresponds to 0.088 gramme of ethyl acetate.

Dose.

Metric.

Imperial.

1 to 2 mls (repeated).	15 to 30 minims (repeated).
3 to 4 mls (single).	45 to 60 minims (single).

ÆTHER PURIFICATUS

Purified Ether

Purified Ether possesses the characters and answers to the tests given under 'Æther.' It answers also to the following tests :—

Tests.—Kept in contact with *potassium hydroxide* freshly broken into small fragments, in a well stoppered white glass bottle in the dark, no yellow coloration is developed within one hour. Mixed with one-tenth of its volume of a freshly prepared 10 per cent. solution of *potassium iodide*, it does not develop a yellow colour within three hours when kept in a completely filled white glass stoppered bottle in the dark and frequently shaken. Yields no reaction with the following test for methyl compounds :—

Well shake 2 volumes of the Purified Ether in a separating funnel with 1 volume of *alcohol* (20 per cent.) and 1 volume of *water*, allow the mixture to separate and draw off the lower layer. Mix 5 millilitres of this lower layer in a wide test-tube with 2.5 millilitres of a 2 per cent. aqueous solution of *potassium permanganate* and 0.2 millilitre of *sulphuric acid*. At the end of three minutes add to the contents of the tube 0.5 millilitre of a 9.6 per cent. aqueous solution of *oxalic acid*, followed by 1 millilitre of *sulphuric acid*, and then by 5 millilitres of *decolorised solution of fuchsin*; mix thoroughly and set aside for twenty minutes. No violet colour is produced (absence of methyl compounds).

AGROPYRUM**Couch Grass**

Synonym—Triticum

Couch Grass is the dried rhizome of *Agropyron repens*, *Beauv.*, freed from remains of leaves and rootlets.

Characters.—Rhizome pale yellow, rigid, from two to two and a half millimetres in diameter, usually in pieces from three to six millimetres long. Strongly furrowed longitudinally, hollow except at the nodes. Contains no starch. No odour; taste slightly sweet.

ALCOHOL ABSOLUTUM**Absolute Alcohol**

Absolute Alcohol is ethyl hydroxide, C_2H_5OH , with not more than 1 per cent. by weight of water; obtained by the dehydration of less strong ethylic alcohol, and subsequent distillation.

Characters and Tests.—Specific gravity from 0.794 (equivalent to 99.95 per cent. of ethyl hydroxide by volume and by weight) to 0.7969 (equivalent to 99.4 per cent. of ethyl hydroxide by volume or 99 per cent. by weight). Very volatile and hygroscopic at ordinary temperatures. Anhydrous *copper sulphate* shaken occasionally during two or three hours in a well-closed vessel with about fifty times its weight of Absolute Alcohol does not assume a decidedly blue colour (absence of excess of water). Is free from the impurities mentioned under '*Spiritus Rectificatus*,' and resembles it in other general characters.

NOTES ON THE

REVISION

OF THE

REVISION

OF THE

OF THE

OF THE

NOTES ON THE

REVISION

OF THE

OF THE

OF THE

OF THE

OF THE

OF THE

OF THE

ALOE

Aloes

Aloes is the juice that flows from the transversely cut leaves of *Aloe chinensis*, *Baker*, *Aloe Perryi*, *Baker*, and probably other species, evaporated to dryness. Known in commerce as Curaçao aloes, Socotrine aloes, or Zanzibar aloes.

Characters and Tests.—In hard masses, varying in colour from yellowish-brown to dark or chocolate-brown. Fractured surface dull, waxy and uniform (Curaçao and Zanzibar aloes), or uneven and somewhat porous (Socotrine aloes). Small splinters examined under the microscope exhibit minute crystals embedded in a transparent mass. Characteristic odour; taste nauseous and bitter. The solution obtained by dissolving 0.1 gramme of Aloes in 10 millilitres of boiling *water* and adding 0.5 gramme of *borax* acquires a green fluorescence. *Nitric acid* dropped on a little crushed Aloes acquires a reddish-brown colour (Socotrine and Zanzibar aloes), or a crimson colour (Curaçao aloes). Almost entirely soluble in *alcohol* (60 per cent.). Loss on drying at 100° not more than 10 per cent. Ash not more than 5 per cent.

*Dose.**Metric.*

12 to 30 centigrams.

Imperial.

2 to 5 grains.

ALOINUM

Aloin

Aloin is a crystalline principle obtained from aloes.

Characters and Tests.—A pale yellow, microcrystalline powder. Almost inodorous; taste intensely bitter. Almost entirely soluble in 130 parts of *water*, in 18 parts of

alcohol (90 per cent.), and in 50 parts of *acetone*; very sparingly soluble in *ether*, *chloroform*, and *benzene*; readily soluble in dilute *solution of ammonia*, the liquid becoming red and acquiring a greenish-red fluorescence. 0·5 gramme of Aloin gently warmed with 25 millilitres of *water* forms an almost clear solution; the filtered liquid remains clear on cooling, but on long standing slowly deposits pale yellow crystals of Aloin. One drop of *solution of copper sulphate* added to 20 millilitres of a 0·1 per cent. aqueous solution of Aloin produces a bright yellow coloration, which is changed to red by the addition of 0·5 millilitre of a saturated aqueous solution of *sodium chloride*, and to violet on the further addition of 1·0 millilitre of *alcohol* (90 per cent.). No appreciable ash.

Dose.

Metric.
3 to 12 centigrams.

Imperial.
 $\frac{1}{2}$ to 2 grains.

ALSTONIA

Alstonia

Alstonia is the dried bark of *Alstonia scholaris*, *R. Br.*, and also of *Alstonia constricta*, *F. Muell.*

Characters.—Bark of *Alstonia scholaris* usually in irregular fragments, three to twelve millimetres thick; texture somewhat spongy, fracture short and coarse; external layer unevenly rough and fissured, brownish-grey with occasional blackish spots; internal layer bright buff. Transverse section shows numerous small medullary rays in inner layer. Almost odourless; taste bitter.

Bark of *Alstonia constricta* usually in curved pieces or quills sixty-four millimetres wide, or more, and twelve millimetres thick. Periderm from two and a half to six millimetres thick, rusty brown, strongly rugose, with large deeply fissured reticulations. Bark internally cinnamon-

brown and with strong coarse longitudinal striæ. Transverse section shows dark brown periderm covering the inner orange-brown tissues, in which numerous small shining particles can be seen with a lens. Fracture short and granular in outer layers, fibrous in inner. Slight aromatic odour; taste very bitter.

ALUMEN PURIFICATUM

Purified Alum

Purified Alum is aluminium and potassium sulphate (Potassium Alum), $\text{Al}_2(\text{SO}_4)_3$, $\text{K}_2\text{SO}_4 \cdot 24\text{H}_2\text{O}$, or aluminium and ammonium sulphate (Ammonium Alum), $\text{Al}_2(\text{SO}_4)_3$, $(\text{NH}_4)_2\text{SO}_4$, $24\text{H}_2\text{O}$, and is obtained by the combination of aluminium sulphate with potassium sulphate or with ammonium sulphate.

Characters and Tests.—In colourless transparent crystalline masses; taste sweetish astringent. Soluble in 10 parts of *water*, the solution being clear and having an acid reaction; freely soluble in *glycerin*, insoluble in *alcohol* (90 per cent.). Yields the *reactions* characteristic of aluminium, of potassium or ammonium, and of sulphates. Yields no characteristic *reactions* for copper, lead, zinc, calcium, and sodium, and not more than very slight *reactions* for iron. *Arsenic limit* 5 parts per million.

Dose.

Metric.
3 to 6 decigrams.

Imperial.
5 to 10 grains.

ALUMEN EXSICCATUM

Exsiccated Alum

Potassium Alum 100 grammes

Heat the Potassium Alum in a porcelain dish or other suitable vessel till it liquefies, then increase and continue the application of heat until aqueous vapour ceases to be disengaged, and the salt has lost from 45 to 46 per cent. of its weight.

Characters.—A white powder slowly and completely soluble in 20 parts of *water*. Absorbs moisture on exposure to air. Yields the reactions and is free from the impurities indicated under 'Alumen.'

AMMONIACUM

Ammoniacum

Ammoniacum is a gum-resin exuded from the flowering and fruiting stem of *Dorema Ammoniacum*, *D. Don*; and possibly other species.

Characters and Tests.—In small dull white, yellowish-white or brownish-white tears or in nodular masses varying from about five to twenty-five millimetres in diameter. Hard and brittle when cold, the freshly fractured surface having a waxy lustre; softens when warmed. Internally opaque and varying in colour from milky white to pale brownish-yellow. Faint characteristic but not alliaceous odour; taste bitter, acrid. Triturated with *water* forms a white emulsion. Freshly fractured surface coloured yellow by *solution of sodium hydroxide* and dark red or orange by *solution of chlorinated soda*. The solution obtained by boiling 1 gramme of the coarsely powdered gum-resin with 10 millilitres of *water*, filtering and adding *alcohol* till clear, assumes a reddish-violet coloration on the addition of one drop of *T.Sol. of ferric chloride*. The solution obtained by boiling 1 gramme of the coarsely powdered gum-resin for a few minutes with 10 millilitres of *hydrochloric acid* diluted with an equal volume of *water*, does not exhibit a blue fluorescence when filtered and made alkaline with *solution of ammonia* (absence of asafetida and African ammoniacum). Ash not more than 7 per cent.

*Dose.**Metric.*

3 to 10 decigrams.

Imperial.

5 to 15 grains.

AMMONII BENZOAS**Ammonium Benzoate**

Ammonium Benzoate, $\text{NH}_4\text{C}_7\text{H}_5\text{O}_2$, may be obtained by neutralising benzoic acid with solution of ammonia.

Characters and Tests.—Colourless lamellar crystals. Taste saline, slightly acrid. Soluble in 6 parts of *water*, and in 30 parts of *alcohol* (90 per cent.). Yields the *reactions* characteristic of ammonium salts. An aqueous solution yields a pale reddish precipitate on the addition of *T.Sol. of ferric chloride*. A strong aqueous solution to which a little *hydrochloric acid* is added, yields a crystalline precipitate of benzoic acid. Completely volatilised by heat. If 1 gramme is dissolved in 20 millilitres of *water* and excess of *nitric acid* added, a crystalline precipitate of benzoic acid separates, the filtrate from which remains clear on the addition of *solution of barium chloride*, and does not become more than slightly opalescent on the addition of *solution of silver nitrate*. *Lead limit* 10 parts per million. *Arsenic limit* 2 parts per million.

*Dose.**Metric.*

3 to 10 decigrams.

Imperial.

5 to 15 grains.

AMMONII BROMIDUM**Ammonium Bromide**

Ammonium Bromide may be obtained by neutralising hydrobromic acid with solution of ammonia. When dried at 100° it contains not less than 98 per cent. of pure ammonium bromide, NH_4Br .

Characters and Tests.—Small colourless crystals. Taste somewhat pungent, saline. Soluble in 1·5 parts of *water*, and in 13 parts of *alcohol* (90 per cent.). Yields the *reactions* characteristic of ammonium salts and of bromides. Loses not more than 1 per cent. of its weight when dried at 100°. 0·5 gramme of this dried salt dissolved in *water* requires for complete precipitation not less than 50·5 and not more than 51·5 millilitres of *N/10 solution of silver nitrate* (limit of impurities). Completely volatilised by heat. Yields no characteristic *reactions* for iron, bromates, iodides, or nitrates, and not more than the slightest *reactions* with the tests for sulphates. *Lead limit* 10 parts per million. *Arsenic limit* 5 parts per million.

Dose.

Metric.

3 to 20 decigrams.

Imperial.

5 to 30 grains.

AMMONII CARBONAS

Ammonium Carbonate

Ammonium Carbonate is a variable mixture of ammonium hydrogen carbonate, NH_4HCO_3 , with ammonium carbamate, $\text{NH}_4\text{NH}_2\text{CO}_2$. It may be obtained by heating ammonium sulphate or chloride with calcium carbonate.

Characters and Tests.—Translucent, crystalline masses. Ammoniacal odour; taste pungent, ammoniacal. Alkaline to *litmus*. Soluble in 4 parts of *water*. Exposed to the air it becomes covered with a white efflorescence which is only superficial; this efflorescence should be scraped off before the salt is used for dispensing. Yields the *reactions* characteristic of ammonium salts and of carbonates. 1 gramme dissolved in 40 millilitres of *water* requires for neutralisation not less

than 18.0 millilitres of *N/1 solution of sulphuric acid*. Completely volatilised by heat. Yields not more than the slightest *reactions* for chlorides or sulphates. *Lead limit* 5 parts per million. *Arsenic limit* 2 parts per million. When its aqueous solution is neutralised with a mineral acid and evaporated to dryness, the residue is colourless and odourless (absence of tarry matters).

Dose.

Metric.

2 to 6 decigrams.

Imperial.

3 to 10 grains.

AMMONII CHLORIDUM

Ammonium Chloride

Ammonium Chloride, NH_4Cl , may be obtained by neutralising crude solution of ammonia or ammonium carbonate with hydrochloric acid, and purifying the product.

Characters and Tests.—Colourless, inodorous crystals. Taste saline, cooling. Soluble in 3 parts of *water*, and in 60 parts of *alcohol* (90 per cent.). Yields the *reactions* characteristic of ammonium salts and of chlorides. Completely volatilised by heat. Yields no characteristic *reactions* for copper, carbonates, or nitrates, and not more than the slightest *reactions* for iron, or for sulphates. *Lead limit* 5 parts per million. *Arsenic limit* 5 parts per million.

Dose.

Metric.

3 to 12 decigrams.

Imperial.

5 to 20 grains.

AMYGDALA AMARA**Bitter Almond**

Bitter Almond is the ripe seed of *Prunus Amygdalus*, *Stokes*, var. *amara*, *Baill.*

Characters.—Resembles the Sweet Almond in general appearance, but is distinguished by being shorter and proportionally broader, by its bitter taste, and by the characteristic odour of prussic acid given off by its aqueous emulsion.

AMYGDALA DULCIS**Sweet Almond**

Sweet Almond is the ripe seed of *Prunus Amygdalus*, *Stokes*, var. *dulcis*, *Baill.* Known in commerce as the Jordan almond.

Characters.—About two and a half centimetres or somewhat more in length, nearly oblong in outline, more or less compressed, pointed at one extremity and rounded at the other. Testa cinnamon-brown, thin and scaly. Seed exalbuminous, containing two large planoconvex oily cotyledons. Taste bland; when triturated with water forms a white emulsion with no marked odour.

AMYL NITRIS**Amyl Nitrite**

Amyl Nitrite is a liquid obtained by the interaction of amylic alcohol (which has been distilled between 128° and 132°) and nitrous acid. It consists chiefly of iso-amyl nitrite, $C_5H_{11}NO_2$, but contains also other nitrites of the homologous series. It should be kept in small, stoppered bottles in a cool, dark place.

Characters and Tests.—A volatile liquid of a yellowish colour, fragrant odour, and not more than the faintest acid reaction. Almost insoluble in *water*; soluble in *alcohol* (90 per cent.) in all proportions. Specific gravity 0·870 to 0·880. Not less than 90 per cent. distils below 100°. A mixture of 5 volumes with sufficient *alcohol* (90 per cent.) to form 100 volumes yields a liquid of which a portion tested in a nitrometer as described under ‘*Spiritus Ætheris Nitrosi*’ yields not less than 7·9 times its volume of nitric oxide gas. On shaking with an equal volume of *solution of sodium hydroxide* the aqueous portion acquires not more than a pale yellow colour (limit of aldehyde). A small quantity in a test-tube placed in melting ice remains transparent (absence of water).

Dose (by inhalation).

Metric.

12 to 30 centimils.

Imperial.

2 to 5 minims.

AMYLUM

Starch

Starch is procured from the grains of common wheat, *Triticum sativum*, *Lam.*; maize, *Zea Mays*, *Linn.*; and rice, *Oryza sativa*, *Linn.*

Characters and Tests.—In fine powder or in irregular angular or columnar masses, which are readily reduced to powder; white, inodorous. Cold *water* mixed with an equal weight of Starch does not become more than faintly acid or alkaline to *litmus*. Boiled with *water* and cooled, it gives a deep blue colour with *N/10 solution of iodine*. Under the microscope the several varieties of Starch present the following characters:—1. Wheat Starch: A mixture of

large and small granules, the former lenticular in shape, and marked with faint concentric striæ surrounding a nearly central hilum. 2. Maize Starch : Granules more uniform in size, frequently polygonal, somewhat smaller than the large granules of wheat starch, and having a very distinct hilum but without evident concentric striæ. 3. Rice Starch : Granules extremely minute, nearly uniform in size, polygonal, without evident hilum or striæ. Starch is free from granules other than those described.

ANETHI FRUCTUS

Dill Fruit

Dill Fruit is the dried ripe fruit of *Peucedanum graveolens* *Benth. and Hook. f.*

Characters.—Composed of two mericarps usually separate and freed from the pedicel ; each broadly oval, about four millimetres long, and two to three millimetres broad. Brown ; very strongly compressed dorsally ; dorsal ridges inconspicuous, but the lateral ridges prolonged into paler brown wings. In transverse section, six vittæ in each mericarp. Odour and taste agreeably aromatic.

ANISI FRUCTUS

Anise Fruit

Anise Fruit is the dried ripe fruit of *Pimpinella Anisum*, *Linn.*

Characters and Test.—Ovoid, somewhat compressed laterally; about five millimetres long and two millimetres broad. Mericarps usually united and attached to the pedicel. Rough from the presence of short bristly hairs. Greenish-grey or greyish-brown; primary ridges pale, slender and entire. In transverse section, numerous vittæ in each mericarp; commissural surface of the endosperm not deeply grooved. Agreeably aromatic odour; taste aromatic and sweet. Ash not more than 11 per cent.

ANTHEMIDIS FLORES

Chamomile Flowers

Chamomile Flowers are the expanded flower-heads of *Anthemis nobilis*, *Linn.*, collected from cultivated plants, and dried.

Characters.—Flower-heads hemispherical, from about twelve to twenty millimetres in diameter, white or pale buff in colour. Involucre composed of several rows of oblong bracts with membranous margins; receptacle solid, conical, and deeply covered with concave, blunt, narrow, scaly bracts; florets mostly ligulate and white, the ligula possessing four veins and terminating in three teeth. Strong aromatic odour; taste bitter.

ANTIMONII OXIDUM

Antimonious Oxide

Antimonious Oxide, Sb_2O_3 , may be obtained by pouring solution of antimonious chloride into water, and decomposing the precipitated antimony oxychloride with sodium carbonate.

Characters and Tests.—A greyish-white powder, fusible at a low red heat. Insoluble in *water*, readily dissolved in *hydrochloric acid*. The solution yields the *reactions* characteristic of antimony. The solution obtained by dissolving 0·25 grammes in *diluted hydrochloric acid*, adding 5 grammes of *sodium potassium tartrate* and then a slight excess of *sodium bicarbonate*, discharges the colour of 34·5 millilitres of *N/10 solution of iodine*. Yields no characteristic *reactions* for lead, copper, calcium, sodium, or potassium, not more than slight *reactions* for iron, and not more than the slightest *reactions* for chlorides or sulphates. Dissolves entirely when boiled with an excess of an aqueous solution of *acid potassium tartrate*.

Dose.

Metric.
6 to 12 centigrams.

Imperial.
1 to 2 grains.

ANTIMONIUM SULPHURATUM

Sulphurated Antimony

Sulphurated Antimony is a mixture containing antimony sulphides and oxides, and sulphur.

Antimonious sulphide ('black antimony')	of commerce	. . .	200 grammes
Sublimed Sulphur		. . .	200 grammes
Caustic soda of commerce		. . .	100 grammes
Diluted Sulphuric Acid	} of each a sufficient quantity		
Distilled Water			

Dissolve the caustic soda in two thousand millilitres of the Distilled Water; with this solution mix the antimonious sulphide and the Sublimed Sulphur; boil for two hours with frequent stirring, adding Distilled Water occasionally to maintain the same volume; then, while the

mixture is still hot, add three thousand six hundred millilitres of boiling Distilled Water ; strain the product through calico ; before the strained liquid cools add to it by degrees Diluted Sulphuric Acid till the latter is in slight excess ; collect the precipitate on a calico filter ; wash with Distilled Water till the washings are free from sulphates ; dry at a temperature not exceeding 100°.

Characters and Tests.—An orange-red powder, readily dissolved by hot *hydrochloric acid* with evolution of hydrogen sulphide and separation of sulphur. 1 gramme digested with 20 millilitres of hot *water* yields a filtrate which, after acidification with *diluted nitric acid*, becomes not more than slightly cloudy on the addition of *solution of barium chloride* (limit of sulphates). *Arsenic limit* 1000 parts per million. 3 grammes moistened with *diluted nitric acid*, warmed with successive portions of *fuming nitric acid* until red fumes cease to be evolved, and then dried and carefully heated to redness, leave a whitish residue weighing not less than 1.6 or more than 1.8 grammes.

Dose.

Metric.

6 to 12 centigrams.

Imperial.

1 to 2 grains.

ANTIMONIUM TARTARATUM

Tartarated Antimony

Synonyms—Potassio-tartrate of Antimony :
Tartar Emetic : Emetic Tartar

Tartarated Antimony may be obtained by setting aside a mixture of antimonious oxide and acid potassium tartrate, made into a paste with a little water, until combination has taken place, and then purifying by crystallisation from water. Contains not less than 99 per cent. of antimonium potassio-tartrate, $(\text{KSbOC}_4\text{H}_4\text{O}_6)_2\text{H}_2\text{O}$.

THE UNIVERSITY OF CHICAGO

THE UNIVERSITY OF CHICAGO
DIVISION OF THE PHYSICAL SCIENCES
DEPARTMENT OF CHEMISTRY
530 SOUTH EAST ASIAN AVENUE
CHICAGO, ILLINOIS 60607-7070
TEL: 773/936-5000 FAX: 773/936-5001

THE UNIVERSITY OF CHICAGO
DIVISION OF THE PHYSICAL SCIENCES
DEPARTMENT OF CHEMISTRY
530 SOUTH EAST ASIAN AVENUE
CHICAGO, ILLINOIS 60607-7070
TEL: 773/936-5000 FAX: 773/936-5001

THE UNIVERSITY OF CHICAGO
DIVISION OF THE PHYSICAL SCIENCES
DEPARTMENT OF CHEMISTRY
530 SOUTH EAST ASIAN AVENUE
CHICAGO, ILLINOIS 60607-7070
TEL: 773/936-5000 FAX: 773/936-5001

THE UNIVERSITY OF CHICAGO

DIVISION OF THE PHYSICAL SCIENCES

DEPARTMENT OF CHEMISTRY
530 SOUTH EAST ASIAN AVENUE
CHICAGO, ILLINOIS 60607-7070
TEL: 773/936-5000 FAX: 773/936-5001

THE UNIVERSITY OF CHICAGO
DIVISION OF THE PHYSICAL SCIENCES
DEPARTMENT OF CHEMISTRY
530 SOUTH EAST ASIAN AVENUE
CHICAGO, ILLINOIS 60607-7070
TEL: 773/936-5000 FAX: 773/936-5001

Characters and Tests.—Colourless transparent crystals exhibiting triangular facets. Soluble in 17 parts of *water*, forming a slightly acid solution; almost insoluble in *alcohol* (90 per cent.), moderately soluble in weak alcoholic liquids. Taste sweet and metallic. Precipitated from its solutions by *solution of tannic acid*. Yields the *reactions* characteristic of antimony, of potassium, and of tartrates. The solution obtained by dissolving 0.5 gramme in 25 millilitres of *water*, and adding 5 grammes of *sodium potassium tartrate* and 1.5 grammes of *sodium bicarbonate*, discharges the colour of not less than 29.8 or more than 30.2 millilitres of *N/10 solution of iodine*. Yields no characteristic *reactions* for lead, copper, iron, sodium, ammonium, chlorides, or sulphates. Does not effervesce with an aqueous solution of *sodium bicarbonate* (absence of acid potassium tartrate).

Dose.

<i>Metric.</i>	<i>Imperial.</i>
2.5 to 8 milligrams (diaphoretic).	$\frac{1}{25}$ to $\frac{1}{8}$ grain (diaphoretic).
3 to 6 centigrams (emetic).	$\frac{1}{2}$ to 1 grain (emetic).

Antipyrin, p. 287

APOMORPHINÆ HYDROCHLORIDUM

Apomorphine Hydrochloride

Apomorphine Hydrochloride, $(C_{17}H_{17}NO_2, HCl)_2, H_2O$, is the hydrochloride of an alkaloid which may be obtained from morphine by the abstraction of the elements of a molecule of water.

Characters and Tests.—Small, greyish-white, shining, acicular crystals, turning green on exposure to air and light. Soluble in 60 parts of *water* and in 50 parts of *alcohol* (90 per cent.) The solutions decompose on boiling or keeping with production of a green colour; but remain unchanged

for a considerable time if acidified with a trace of *hydrochloric acid*. Yields the *reactions* characteristic of chlorides. Gives a deep red colour with dilute *T.Sol. of ferric chloride*. The addition of an aqueous solution of *sodium bicarbonate* to an aqueous solution of Apomorphine Hydrochloride (1 in 100) produces a white precipitate rapidly changing to green; this precipitate forms a purple solution with *ether*, a bluish solution with *chloroform*, and a green solution with *alcohol* (90 per cent.).

*Dose.**Metric.**Imperial.**By hypodermic injection,*

3 to 6 milligrams.

 $\frac{1}{20}$ to $\frac{1}{10}$ grain.*By the mouth,*

6 to 16 milligrams.

 $\frac{1}{10}$ to $\frac{1}{4}$ grain.

AQUA ANETHI

Dill Water

Dill Fruit	100 grammes
Water	2000 millilitres

Distil one thousand millilitres.

In preparing this and other similar aqueous liquids by distillation, only good natural potable water must be employed, as directed for 'Distilled Water.'

See Appendix XII, page , Aquæ.

AQUA ANISI

Anise Water

Anise Fruit	100 grammes
Water	2000 millilitres

Distil one thousand millilitres.

See Appendix XII, page , Aquæ.

AQUA AURANTII FLORIS**Orange-flower Water**

Orange-flower Water is the orange-flower water of commerce, prepared by distillation from the flowers of the Bitter Orange tree, *Citrus Aurantium*, var. *Bigaradia*, *Hook, f.*, diluted, immediately before use, with twice its volume of Distilled Water.

Characters and Tests.—Colourless or with a slight yellowish tint; odour very fragrant. Yields no *reactions* for lead or copper.

The orange-flower water of commerce is a saturated solution of the volatile oil of the fresh flowers.

AQUA CAMPHORÆ**Camphor Water**

Camphor	1 gramme
Alcohol (90 per cent.)	2 millilitres
Distilled Water	1000 millilitres

Dissolve the Camphor in the Alcohol; add the solution in successive portions to the Distilled Water, shaking after each addition; finally shake occasionally until all the Camphor is dissolved.

AQUA CARUI**Caraway Water**

Caraway Fruit	100 grammes
Water	2000 millilitres

Distil one thousand millilitres.

See Appendix XII, page . . . , *Aquæ*.

THE UNIVERSITY OF CHICAGO

PHYSICS DEPARTMENT

PHYSICS 309

LECTURE 10: THE QUANTUM THEORY OF LIGHT
The quantum theory of light is a cornerstone of modern physics. It describes the interaction of light with matter at the atomic level. The key concept is the photon, a particle of light that carries energy and momentum. The energy of a photon is proportional to its frequency, $E = hf$, where h is Planck's constant and f is the frequency. This relationship was first proposed by Max Planck in 1900 to explain the black-body radiation spectrum. It was later extended by Albert Einstein in 1905 to explain the photoelectric effect, for which he received the Nobel Prize in 1921. The quantum theory of light has led to the development of quantum electrodynamics (QED), which is the most accurate theory of light and matter interactions.

PHYSICS 309

LECTURE 10

THE QUANTUM THEORY OF LIGHT
The quantum theory of light is a cornerstone of modern physics. It describes the interaction of light with matter at the atomic level. The key concept is the photon, a particle of light that carries energy and momentum. The energy of a photon is proportional to its frequency, $E = hf$, where h is Planck's constant and f is the frequency. This relationship was first proposed by Max Planck in 1900 to explain the black-body radiation spectrum. It was later extended by Albert Einstein in 1905 to explain the photoelectric effect, for which he received the Nobel Prize in 1921. The quantum theory of light has led to the development of quantum electrodynamics (QED), which is the most accurate theory of light and matter interactions.

PHYSICS 309

LECTURE 10

THE QUANTUM THEORY OF LIGHT
The quantum theory of light is a cornerstone of modern physics. It describes the interaction of light with matter at the atomic level. The key concept is the photon, a particle of light that carries energy and momentum. The energy of a photon is proportional to its frequency, $E = hf$, where h is Planck's constant and f is the frequency. This relationship was first proposed by Max Planck in 1900 to explain the black-body radiation spectrum. It was later extended by Albert Einstein in 1905 to explain the photoelectric effect, for which he received the Nobel Prize in 1921. The quantum theory of light has led to the development of quantum electrodynamics (QED), which is the most accurate theory of light and matter interactions.

AQUA CHLOROFORMI

Chloroform Water

Chloroform		2.5 millilitres
Distilled Water	sufficient to produce	
		1000.0 millilitres
Dissolve.		

AQUA CINNAMOMI

Cinnamon Water

Cinnamon Bark, bruised.		100 grammes
Water		2000 millilitres

Distil one thousand millilitres.

See Appendix XII, page , Aquæ.

AQUA DESTILLATA

Distilled Water

Distilled Water is prepared by distillation from good natural potable water.

Characters and Tests.—Colourless, tasteless, and odourless. Yields no *reactions* for sulphates, chlorides, or nitrates. 100 millilitres evaporated to dryness on a water-bath leave not more than 0.005 gramme of solid residue. 50 millilitres with one drop of *solution of sodium sulphide* remain colourless when viewed in a Nessler glass standing on a white tile (absence of lead, copper and iron). 250 millilitres with a mixture of 3 millilitres of *sulphuric acid* and 0.1 millilitre of *N/10 solution of potassium permanganate*, after standing for three hours at about 15.5°, are coloured blue on the addition of a crystal of *potassium*

THE HISTORY OF THE

AMERICAN PEOPLE

BY

JOHN F. JOHNSON

NEW YORK

1850

1850

THE HISTORY OF THE

AMERICAN PEOPLE

BY

JOHN F. JOHNSON

THE HISTORY OF THE

AMERICAN PEOPLE

BY

JOHN F. JOHNSON

NEW YORK

1850

1850

1850

1850

1850

1850

1850

1850

1850

iodide and 1 millilitre of *mucilage of starch* (absence of more than traces of organic matter). 50 millilitres mixed with 2 millilitres of *alkaline solution of potassio-mercuric iodide* when viewed in a Nessler glass standing on a white tile do not, after five minutes, yield a more intense colour than that yielded by 50 millilitres of ammonia-free water with 0.5 millilitre of *dilute solution of ammonium chloride* (*Nessler's*) when tested under similar conditions (limit of ammonia).

AQUA FŒNICULI

Fennel Water

Fennel Fruit	.	.	.	.	100 grammes
Water	.	.	.	.	2000 millilitres

Distil one thousand millilitres.

See Appendix XII, page , Aquæ.

AQUA LAUROCERASI

Cherry-Laurel Water

Fresh Cherry-Laurel Leaves, crushed	800 grammes
Water	2500 millilitres

Distil one thousand millilitres; shake the product; filter, if necessary; adjust the strength of the finished product either by adding hydrocyanic acid or Distilled Water, so that, when tested as described under 'Acidum Hydrocyanicum Dilutum,' it contains 0.1 per cent. of hydrocyanic acid, HCN.

Dose.

Metric.
2 to 8 mls.

Imperial.
 $\frac{1}{2}$ to 2 fluid drachms.

AQUA MENTHÆ PIPERITÆ**Peppermint Water**

Oil of Peppermint	. . .	1 millilitre
Water	. . .	1500 millilitres

Distil one thousand millilitres.

See Appendix XII, page , Aquæ.

AQUA MENTHÆ VIRIDIS**Spearmint Water**

Oil of Spearmint	. . .	1 millilitre
Water	. . .	1500 millilitres

Distil one thousand millilitres.

See Appendix XII, page , Aquæ.

AQUA ROSÆ**Rose Water**

Rose Water is the rose water of commerce, prepared by distillation from the flowers of *Rosa damascena*, *Linn.*, diluted, immediately before use, with twice its volume of Distilled Water.

The rose water of commerce is a saturated solution of the volatile oil of the rose flowers.

ARAROBA**Araroba**

Synonyms—Goa Powder: Crude Chrysarobin

Araroba is a substance found in cavities in the trunk of

THE UNIVERSITY OF CHICAGO

LIBRARY

1900

THE UNIVERSITY OF CHICAGO

LIBRARY

1900

THE UNIVERSITY OF CHICAGO

LIBRARY

1900

THE UNIVERSITY OF CHICAGO

LIBRARY

1900

Andira Araroba, *Aguiar*, freed as much as possible from fragments of wood, dried and powdered.

Characters and Test.—The powder varies in colour from brownish-yellow to umber-brown. Yields to hot *benzene* not less than 50 per cent. of a substance which, on evaporating the benzene from the filtrate, drying and powdering the residue, has the characters described under ‘*Chrysarobinum*.’

ARGENTI NITRAS

Silver Nitrate

Synonym—Lunar Caustic

Silver Nitrate, AgNO_3 , may be obtained by the interaction of nitric acid and silver.

Characters and Tests.—In colourless tabular crystals. Taste bitter, metallic. Soluble in less than its own weight of *water*, slightly soluble in *alcohol* (90 per cent.); soluble in *ether*, and in *glycerin*. Yields the *reactions* characteristic of silver and of nitrates. 1 gramme dissolved in 15 millilitres of *water* yields with *hydrochloric acid* a precipitate, which, when washed and dried, weighs 0.843 gramme. The filtrate, when evaporated to dryness on a water-bath, leaves no appreciable residue. Yields no characteristic *reactions* for lead, copper, iron, or sulphates.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
16 to 30 milligrams.	$\frac{1}{4}$ to $\frac{1}{2}$ grain.

ARGENTI NITRAS INDURATUS

Toughened Caustic

Silver Nitrate	95 grammes
Potassium Nitrate	5 grammes

Fuse together, mix and pour into suitable moulds.

Characters and Tests.—White or greyish-white cylindrical rods or cones. Freely soluble in *water*, but only sparingly in *alcohol* (90 per cent.). Yields the *reactions* characteristic of silver, of potassium, and of nitrates. 1 gramme, dissolved in 15 millilitres of *water*, yields with *hydrochloric acid* a precipitate which, when washed and dried, weighs 0·8 gramme, and the filtrate when evaporated leaves a white residue.

ARGENTI NITRAS MITIGATUS

Mitigated Caustic

Silver Nitrate	20 grammes
Potassium Nitrate	40 grammes

Fuse together, mix and pour into suitable moulds.

Characters and Tests.—White or greyish-white cylindrical rods or cones. Freely soluble in *water*, but only sparingly in *alcohol* (90 per cent.). Yields the *reactions* characteristic of silver, of potassium, and of nitrates. 3 grammes dissolved in 15 millilitres of *water* yield with *hydrochloric acid* a precipitate which, after washing with hot *water* and drying, weighs 0·843 gramme.

ARMORACIÆ RADIX

Horseradish Root

Horseradish Root is the fresh root of *Cochlearia Armoracia*, *Linn.*, collected from cultivated plants.

Characters.—Nearly cylindrical, except at the crown, where it is somewhat enlarged, and marked with closely approximated semi-amplexicaul leaf-scars. Diameter from twelve to twenty-five millimetres, length commonly thirty centimetres or more; pale yellowish-white or brownish-white externally, whitish within. Inodorous when unbroken,

but yielding a characteristic pungent odour when scraped or bruised; taste very pungent.

ARNICÆ FLORES

Arnica Flowers

Arnica Flowers are the dried flower-heads of *Arnica montana*, *Linn.*

Characters.—Receptacle nearly flat, bristly, with two rows of dark-green, linear-lanceolate, acute, hairy bracts. Each ray-floret possesses a much shrivelled dark yellow ligulate corolla which, after expansion in water, exhibits from eight to twelve veins and three terminal teeth. Disc-florets numerous, yellow. Fruits slender, shrivelled, with numerous appressed hairs, and crowned with a single row of stiff, whitish, barbed bristles. Slight aromatic odour; taste bitter and acrid.

ARSENII IODIDUM

Arsenious Iodide

Arsenious Iodide, AsI_3 , may be obtained by the direct combination of iodine and arsenium, and purification of the product by crystallisation.

Characters and Tests.—Small orange-coloured crystals. Soluble in *water*, and in *alcohol* (90 per cent.). The aqueous solution is acid to *litmus*, and yields the *reactions* characteristic of arsenic and of iodides. Heated in a test-tube it entirely volatilises, violet vapours of iodine being set free.

Dose.

Metric.
3 to 12 milligrams.

Imperial.
 $\frac{1}{20}$ to $\frac{1}{5}$ grain.

ASAFETIDA

Asafetida

Asafetida is an oleo-gum-resin obtained by incision from the root of *Ferula foetida*, *Regel*, and probably other species.

Characters and Tests.—Rounded or flattened tears from twelve to twenty-five millimetres in diameter, or masses containing tears, greyish-white to dull yellow, darkening on keeping. Fresh tears usually tough at ordinary temperatures, hard when cold. Internally yellowish and translucent, or milk-white and opaque; freshly exposed surfaces often slowly become pink, then red, and finally reddish-brown. Odour strong, alliaceous and persistent; taste bitter, acrid and alliaceous. When triturated with *water* Asafetida forms a white emulsion. When the freshly fractured surface of a tear is touched with *sulphuric acid*, a bright red or brownish-red colour is produced. The tincture obtained by macerating 0.5 gramme of Asafetida with 10 millilitres of *alcohol* (90 per cent.), filtered, and made alkaline with *strong solution of ammonia*, and then largely diluted with *alcohol* (90 per cent.), does not exhibit a blue fluorescence (distinction from and absence of galbanum). Contains not more than 50 per cent. of matter insoluble in *alcohol* (90 per cent.). Ash not more than 15 per cent.

Dose.

Metric.
3 to 10 decigrams.

Imperial.
5 to 15 grains.

Aspirin, p. 7

ATROPINA

Atropine

Atropine, $C_{17}H_{23}NO_3$, is an alkaloid, obtained from *Atropa Belladonna* and other plants of the natural order Solanaceæ.

Characters and Tests.—Colourless acicular crystals. Soluble in about 500 parts of *water*, readily soluble in *alcohol* (90 per cent.), in *chloroform*, and in *ether*. Melting point 114.5° to 115.5° . Its aqueous solution has an alkaline reaction and powerfully dilates the pupil of the eye. 0.05 gramme dissolved in 5 millilitres of *water* acidified with *hydrochloric acid* yields with *solution of auric chloride* a lemon yellow precipitate which, after recrystallisation from boiling *water* acidified with *hydrochloric acid*, has a minutely crystalline character, is dull and pulverulent when dry, and melts at 137° to 139° (distinction from *hyoscyamine*). 0.01 gramme with 5 drops of *nitric acid* yields, when evaporated to dryness on a water-bath, a residue scarcely yellow in colour which, after cooling, assumes a violet colour on moistening with a freshly prepared *alcoholic solution of potassium hydroxide*. 0.05 gramme dissolves in 1 millilitre of *sulphuric acid* without coloration, and the solution remains colourless on the addition of 1 drop of *nitric acid*. 10 millilitres of a solution containing 1 part of *Atropine* in 80 parts of *water* slightly acidified with *hydrochloric acid* does not at once become cloudy on the addition of 4 millilitres of *solution of ammonia* (absence of *apoeatropine*).

Dose.

Metric.
0.3 to 0.6 milligram.

Imperial.
 $\frac{1}{200}$ to $\frac{1}{100}$ grain.

ATROPINÆ SULPHAS

Atropine Sulphate

Atropine Sulphate, $(C_{17}H_{23}NO_3)_2, H_2SO_4$, is the sulphate of the alkaloid *Atropine*.

Characters and Tests.—Nearly colourless, crystalline, somewhat hygroscopic. Soluble in less than 1 part

of *water*, and in 4 parts of *alcohol* (90 per cent.), the solutions being neutral to *litmus* and, even when largely diluted, dilating the pupil of the eye. Melting point from 189° to 190°. 0·05 gramme dissolves in 1 millilitre of *sulphuric acid* without coloration, and the solution remains colourless on the addition of 1 drop of *nitric acid*. 10 millilitres of an aqueous solution (1 in 60) do not at once become cloudy on the addition of 4 millilitres of *solution of ammonia* (absence of apoeatropine). An aqueous solution, not too dilute, yields with *solution of sodium hydroxide* a white precipitate which, when washed and dried, answers to the tests described under 'Atropina.' Yields the *reaction* characteristic of sulphates. Loses not more than 2 per cent. of moisture when dried at 105°.

Dose.

Metric.

0·3 to 0·6 milligram.

Imperial.

$\frac{1}{200}$ to $\frac{1}{60}$ grain.

AURANTII CORTEX INDICUS

Indian Orange Peel

Indian Orange Peel is the fresh and the dried outer part of the pericarp of varieties of *Citrus Aurantium*, *Linn.*, grown in India and Ceylon.

Characters.—Possesses the pleasant aromatic odour and bitter taste characteristic of Bitter-Orange Peel derived from *Citrus Aurantium*, var. *Bigaradia*, *Hook. f.* Inner surface retains not more than a very small amount of the white spongy part of the pericarp.

In India and the Eastern divisions of the Empire, Indian Orange Peel, fresh or dried, may be employed in making the official preparations for which Fresh or Dried Bitter-Orange Peel is directed to be used.

AURANTII CORTEX RECENS**Fresh Bitter-Orange Peel**

Fresh Bitter-Orange Peel is the fresh outer part of the pericarp of *Citrus Aurantium*, var. *Bigaradia*, *Hook. f.*

Characters.—Outer surface red or deep orange-red in colour, and generally rough and glandular. Inner surface retains not more than a very small amount of the white spongy part of the pericarp. Pleasant aromatic odour; taste aromatic, bitter.

AURANTII CORTEX SICCATUS**Dried Bitter-Orange Peel**

Dried Bitter-Orange Peel is the dried outer part of the pericarp of *Citrus Aurantium*, var. *Bigaradia*, *Hook. f.*

Characters.—In thin strips. Outer surface deep orange-red, rough and glandular. Inner surface retains not more than a very small amount of the white spongy part of the pericarp. Pleasant aromatic odour; taste aromatic, bitter.

BALSAMUM PERUVIANUM**Balsam of Peru**

Balsam of Peru is a balsam exuded from the trunk of *Myroxylon Pereiræ*, *Klotzsch*, after the bark has been beaten and scorched.

Characters and Tests.—A viscid liquid, in bulk nearly black but in thin layers deep orange-brown or reddish-brown and transparent. Agreeable balsamic odour; taste acrid, leaving when swallowed a burning sensation

in the throat. Insoluble in *water*; soluble in *chloroform*. 1 volume is soluble in 1 volume of *alcohol* (90 per cent.), but on the further addition of 2 or more volumes of the *alcohol* the mixture becomes turbid. Specific gravity between 1.140 and 1.150. Does not diminish in volume when shaken with an equal bulk of *water* (absence of ethylic alcohol). When tested by the following method it yields not less than 57 per cent. of cinnamein, the *saponification value* of which is not less than 235 :—

Dissolve 1 gramme of the Balsam in 30 millilitres of *ether* and shake in a separating funnel with two successive quantities of 20 and 10 millilitres of *N/2 solution of sodium hydroxide*. Separate the alkaline solutions, mix and shake with 10 millilitres of *ether*. Draw off and reject the alkaline solution. Add the second ethereal solution to that previously obtained. Wash the mixed ethereal solutions with two successive quantities of 5 millilitres of *water*. Transfer the ethereal solution thus washed to a tared wide-mouthed flask, evaporate at a gentle heat until the odour of ether has disappeared, add 1 millilitre of *absolute alcohol*, dry at 100° for half an hour and weigh. The weight of the cinnamein thus obtained is not less than 0.57 gramme. To this residue add 20 millilitres of *N/2 alcoholic solution of potassium hydroxide* and 20 millilitres of *alcohol* (90 per cent.). Attach a reflux condenser, boil for half an hour, and titrate back with *N/2 solution of sulphuric acid*, *solution of phenolphthalein* being used as indicator. Each gramme of the residue thus heated requires not less than 8.4 millilitres of the alkaline solution for complete saponification (corresponding to a *saponification value* of not less than 235).

Dose.

Metric.

3 to 10 decimils.

Imperial.

5 to 15 minims.

BALSAMUM TOLUTANUM

Balsam of Tolu

Balsam of Tolu is a balsam obtained from incisions made in the trunk of *Myroxylon toluiferum*, *H. B. and K.*

Characters and Tests.—A soft, tenacious solid when first imported, becoming harder and finally brittle. Transparent and yellowish-brown in thin films. Pressed between pieces of glass with the aid of heat, and examined with a lens, it exhibits an abundance of crystals. Odour fragrant, especially when warmed; taste somewhat aromatic and slightly acid. Soluble in *alcohol* (90 per cent.), the solution being acid. *Acid value* 107·4 to 147·2; *saponification value* 170 to 202. If 5 grammes are gently warmed with three successive portions of 25, 15, and 10 millilitres of *carbon disulphide*, the solution yields, when evaporated to dryness, a distinctly crystalline residue, which when tested as described under 'Styrax Præparatus' yields not less than 1·25 grammes of balsamic acids.

*Dose.**Metric.*

3 to 10 decigrams.

Imperial.

5 to 15 grains.

BARBITONUM

Barbitone

Synonyms—Diethyl-barbituric Acid : Malonurea :

Diethyl-malonyl-urea = *Veronal*

Barbitone, $C_8H_{12}N_2O_3$, may be obtained by the interaction of the diethyl ester of malonic acid, and carbamide.

Characters and Tests.—A white crystalline powder. Inodorous; taste faintly bitter. Slightly soluble in cold *water*, the solution being neutral to *litmus*; more soluble

in hot *water*, and in *alcohol* (90 per cent.) ; freely soluble in aqueous solutions of the alkalies. Melting point 191°. When fused with a caustic alkali ammonia is evolved ; and when the cooled residue is dissolved in *water* and the solution acidified with *diluted sulphuric acid* carbon dioxide is liberated, and a characteristic odour resembling that of fat-acids is developed. A few drops of *solution of mercury nitrate* added to 25 millilitres of a saturated aqueous solution acidified with *nitric acid* produces a gelatinous precipitate. No appreciable ash.

Dose.

Metric.
3 to 6 decigrams.

Imperial.
5 to 10 grains.

BELÆ FRUCTUS

Bael Fruit

Bael Fruit is the fresh half-ripe fruit of *Ægle Marmelos*, *Correa*.

Characters.—Fruit about seven or eight centimetres in diameter, globular, ovoid or pyriform, greyish or yellowish-brown. Outer surface hard, nearly smooth. Rind about three millimetres in diameter, and adherent to a pale-reddish juicy pulp in which are ten to fifteen cells, each containing several woolly seeds. Faint aromatic odour ; taste mucilaginous, acidulous and slightly astringent.

BELLADONNÆ FOLIA

Belladonna Leaves

Belladonna Leaves are the leaves of *Atropa Belladonna*, *Linn.*, collected when the plant is in flower, and dried.

Characters and Test.—Eight to twenty centimetres long, broadly ovate, acute, entire, glabrous or nearly so. Transverse section exhibits bi-collateral vascular bundles; mesophyll contains numerous cells filled with very minute crystals of calcium oxalate; epidermal cells of both surfaces possess a delicately striated cuticle. Yields not less than 0.30 per cent. of alkaloids when assayed by the following process:—

Into a small stoppered glass percolator provided with a glass tap and suitably plugged with cotton wool introduce 10 grammes of Belladonna Leaves in No. 60 powder and 50 millilitres of a mixture of *chloroform* 1 volume and *ether* 4 volumes. Shake; set aside for ten minutes; then add 2 millilitres of *solution of ammonia* diluted with 3 millilitres of *water*, and set aside for one hour, shaking frequently. Then allow percolation to proceed slowly, receiving the percolate in a separator containing 6 millilitres of *N/1 solution of sulphuric acid* diluted with 20 millilitres of *water*. When the liquid ceases to pass continue the percolation with a further 50 millilitres, or more of the ether-chloroform mixture, added in small quantities, until the Leaves are exhausted. Shake the separator well and, after separation, draw off the acid liquid into a second separator. Repeat the extraction of the ether-chloroform solution with two successive portions, each of 10 millilitres, of the diluted acid. Make the mixed acid solutions alkaline with *solution of ammonia*, and shake out with three successive portions of 15, 15, and 5 millilitres of *chloroform*. Evaporate the mixed chloroformic solutions to dryness, dissolve the residue in 3 millilitres of *ether*, and again evaporate to dryness. Dissolve the residue in 10 millilitres of *N/20 solution of sulphuric acid*, and titrate with *N/20 solution of sodium hydroxide*, *tincture of cochineal* being used as indicator. Deduct the number of millilitres of the alkaline solution required from 10, multiply the difference by 0.1446; the product will be the percentage of alkaloids in the Leaves.

BELLADONNÆ RADIX

Belladonna Root

Belladonna Root is the root of *Atropa Belladonna*, *Linn.*, collected in the autumn, and dried.

Characters.—Nearly cylindrical pieces, entire or longitudinally split, usually ten to twenty millimetres in diameter, and fifteen to thirty centimetres or more in length. Externally pale greyish-brown, and finely wrinkled longitudinally. Transverse fracture short. Internally whitish and starchy. Within and mostly near to the cambium ring are numerous scattered groups of vessels and fibres which do not exhibit a prominently radiate arrangement. Most of the parenchymatous cells contain small compound starch grains; some are filled with numerous very minute crystals of calcium oxalate. Taste slightly bitter.

BENZAMINÆ LACTAS

Benzamine Lactate = *β-eucain lactate*

Benzamine Lactate, $C_{15}H_{21}NO_2, C_3H_6O_3$, is the lactate of benzoyl-vinyl-diaceton-alkamine, from which it may be obtained by neutralising with lactic acid.

Characters and Tests.—A white crystalline powder. Taste slightly bitter followed by a sensation of numbness. Soluble in 5 parts of *water*, and in 8 parts of *alcohol* (90 per cent.). Its aqueous solution yields with an aqueous solution of *salicylic acid* a white precipitate, and with *solution of ammonia* a white precipitate readily soluble in excess of the reagent. Treated with *nitric acid* and *alcoholic solution of potassium hydroxide* as described under 'Cocaina' a similar odour is produced. Does not darken in colour when moistened with *alcohol* (90 per cent.) and triturated with *mercurous chloride* (distinction from

cocaine and α -eucaine). A 1 per cent. aqueous solution gives no precipitate with *solution of potassium iodide* (distinction from α -eucaine). Dissolves in *sulphuric acid* and in *nitric acid* without coloration. No appreciable ash.

Dose.

Metric.
8 to 30 milligrams.

Imperial.
 $\frac{1}{8}$ to $\frac{1}{2}$ grain.

BENZENUM

Benzene

Benzene, C_6H_6 , is a hydrocarbon obtained from light coal-tar oil.

Characters.—A colourless, mobile, inflammable liquid. Insoluble in *water*, but miscible with *absolute alcohol* or *ether*. Specific gravity 0.880 to 0.887. 95 per cent. distils between 79° and 82° . It solidifies when cooled to 0° , and if the temperature be allowed to rise does not entirely remelt below 4° .

BENZOINUM

Benzoin

Benzoin is a resin obtained from the incised stem of *Styrax Benzoin*, *Dryand*. Known in commerce as Sumatra benzoin.

Characters and Tests.—Hard brittle masses consisting of numerous whitish tears embedded in a greyish-brown translucent matrix. Odour agreeable, similar to that of storax; taste slightly acrid. When cautiously heated in a dry test-tube it melts and evolves whitish fumes with an irritating odour. When 0.5 gramme is slowly heated to

about 40° with 10 millilitres of *solution of potassium permanganate* an odour of benzaldehyde is evolved (distinction from Siam benzoin). Not more than 15 per cent. insoluble in *alcohol* (90 per cent.). Ash not more than 5 per cent.

BERBERIS

Berberis

Berberis is the dried stem of *Berberis aristata*, DC.

Characters.—In undulating pieces from two and a half to five centimetres in diameter, covered with orange-brown cork, removed in places showing the subjacent darker brown cortex; marked with slightly wavy longitudinal striæ and occasional shallow transverse depressions. Transverse section shows a narrow brown cork; a broad, dark brown bast traversed by conspicuous yellow medullary rays; a bright yellow wood composed of numerous narrow vascular rays, containing many vessels, separated by narrow paler medullary rays. Slight odour; taste bitter.

BETEL

Betel

Betel consists of the dried leaves of *Piper Betle*, Linn.

Characters.—About fifteen centimetres long, broadly ovate, acuminate, obliquely cordate at base; thin and brittle, upper surface glossy, five or seven conspicuous lateral veins. Mesophyll contains abundant oil-cells filled with brown oleo-resin. Taste warm, aromatic, bitter. As found in commerce the leaves are frequently tied up or stitched together into packets.

BISMUTHI CARBONAS**Bismuth Oxycarbonate**

Synonym—Bismuth Subcarbonate

Bismuth Oxycarbonate, $(\text{Bi}_2\text{O}_2\text{CO}_3)_2 \cdot \text{H}_2\text{O}$, may be obtained by the interaction of bismuth nitrate and ammonium carbonate.

Characters and Tests.—A whitish, inodorous powder. Insoluble in *water*; soluble in *nitric acid* diluted with half its volume of *water*. Yields the *reactions* characteristic of bismuth and of carbonates. Yields when strongly heated from 89 to 91 per cent. of bismuth oxide. Yields no characteristic *reactions* for silver, lead, copper, calcium, selenium, tellurium, or chlorides, and not more than the slightest *reaction* for sulphates. *Arsenic limit* 2 parts per million. On mixing 0·02 gramme with 5 drops of *phenol-disulphonic acid*, adding, after five minutes, 10 millilitres of *solution of ammonia*, filtering, washing the precipitate with *water* and adding *water* to the filtrate until it measures 100 millilitres, the colour of the filtrate is not deeper than that obtained by similarly treating 0·00013 gramme of *potassium nitrate* (limit of nitrate). The solution obtained by exhausting 5 grammes with boiling *water* requires for neutralisation not more than 1 millilitre of *N/10 solution of sulphuric acid* (limit of alkaline carbonates).

Dose.

Metric.

3 to 12 decigrams.

Imperial.

5 to 20 grains.

BISMUTHI SALICYLAS**Bismuth Salicylate**

Bismuth Salicylate, or oxysalicylate, $\text{BiO} \cdot \text{C}_7\text{H}_5\text{O}_3$, may be obtained by the interaction of bismuth hydroxide and salicylic acid.

Characters and Tests.—A white or nearly white amorphous powder, insoluble in *water*. Yields the *reactions* characteristic of bismuth. When shaken with diluted *T. Sol. of ferric chloride* a violet colour is produced. Yields not more than the slightest characteristic *reaction* with the copper test for nitrates. *Arsenic limit* 2 parts per million. When 5 grammes are shaken with 50 millilitres of *ether*, the ethereal solution filtered off and evaporated to dryness leaves not more than 0.005 gramme of residue (limit of free salicylic acid). Yields when strongly heated from 62 to 65 per cent. of bismuth oxide. Is free from the impurities indicated under 'Bismuthi Carbonas.'

Dose.

Metric.

3 to 12 decigrams.

Imperial.

5 to 20 grains.

BISMUTHI SUBNITRAS

Bismuth Oxynitrate

Bismuth Oxynitrate, $\text{BiONO}_3 \cdot \text{H}_2\text{O}$, may be obtained by the interaction of bismuth nitrate and water.

Characters and Tests.—A white, inodorous, microcrystalline powder, with not more than a slight action on *litmus*. Yields the *reactions* characteristic of bismuth and of nitrates. Yields when strongly heated from 79 to 82 per cent. of bismuth oxide. Yields no characteristic *reactions* for silver, lead, copper, calcium, selenium, or tellurium, and not more than the slightest *reactions* for chlorides or sulphates. *Arsenic limit* 2 parts per million.

Dose.

Metric.

3 to 12 decigrams.

Imperial.

5 to 20 grains.

BORAX PURIFICATUS**Purified Borax**

Synonym—Biborate of Sodium

Purified Borax may be obtained from native borax ; it may also be obtained by boiling native calcium borate with solution of sodium carbonate, and contains not less than 98·9 per cent. of sodium pyroborate, $\text{Na}_2\text{B}_4\text{O}_7, 10\text{H}_2\text{O}$.

Characters and Tests.—Transparent colourless crystals, sometimes slightly effloresced, with a weak alkaline reaction. Taste saline, alkaline. Soluble in 25 parts of *water*, and in 1 part of *glycerin* ; insoluble in *alcohol* (90 per cent.). Colours flame intensely yellow. Its aqueous solution, acidified with *hydrochloric acid*, turns *turmeric paper* brown. A hot saturated solution, acidified with a mineral acid, deposits, as it cools, crystals of boric acid, the solution of which in *alcohol* (90 per cent.) burns with a green flame. 2 grammes dissolved in *water* require for neutralisation 10·4 millilitres of *N/1 solution of sulphuric acid*, *solution of methyl-orange* being used as indicator ; and if to this neutralised solution an equal volume of *glycerin* is added, 20·8 millilitres of *N/1 solution of sodium hydroxide* are required for neutralisation, *solution of phenolphthalein* being used as indicator. Yields no characteristic *reactions* for copper, iron, calcium, or carbonates, and not more than the slightest *reactions* for chlorides or sulphates. *Lead limit* 5 parts per million. *Arsenic limit* 5 parts per million.

Dose.

Metric.
3 to 10 decigrams.

Imperial.
5 to 15 grains.

BUCHU FOLIA**Buchu Leaves**

Buchu Leaves are the dried leaves of *Barosma betulina*, *Bart.* and *Wendl.*

Characters.—From twelve to twenty millimetres long, rhomboid-obovate, dull yellowish-green, rigid, or cartilaginous when slightly moist. Surface glabrous and bears small scattered prominences, margin usually sharply denticulate, apex blunt and recurved. Oil glands visible in the leaf, especially near the margin. Transverse section exhibits in epidermis cells containing yellow sphero-crystals; inner walls of these cells thick and rich in mucilage. Odour and taste strong and characteristic.

BUTEÆ GUMMI

Butea Gum

Synonym—Bengal Kino

Butea Gum is the inspissated juice obtained from incisions in the stem of *Butea frondosa*, *Roxb.*

Characters.—Small irregular shining fragments, very dark ruby colour, thinnest flakes transparent when examined by transmitted light. Partially soluble in *water*; about 40 per cent. soluble in hot *alcohol* (90 per cent.), the solution being scarcely coloured. No odour; taste astringent. Is free from corky or woody particles. On keeping, the fragments may become dull and blackish.

In India and the Eastern Divisions of the Empire, Butea Gum may be employed in making the official preparations for which Kino (distinguished in commerce as East Indian, Malabar, Madras, or Cochin kino) is directed to be used.

BUTEÆ SEMINA

Butea Seeds

Butea Seeds are the seeds of *Butea frondosa*, *Roxb.*

Characters.—Flat, reniform, from twenty-five to thirty-eight millimetres long, sixteen to twenty-five millimetres

wide, and one and a half to two millimetres thick. Testa thin, glossy, veined, wrinkled, dark reddish-brown. Cotyledons large, leafy, yellow. Faint odour ; taste slightly acid.

BUTYL-CHLORAL HYDRAS

Butyl-Chloral Hydrate

Butyl-Chloral Hydrate, or trichlorobutylidene glycol, $C_4H_7Cl_3O_2$, is a crystalline hydrate obtained by adding water to the liquid butyl-chloral produced by the action of chlorine gas on aldehyde.

Characters and Tests.—Pearly white, trimetric laminæ. Odour pungent but not acrid ; taste acrid and nauseous. Melts at about 78° to a transparent liquid, which, on cooling, commences to solidify at about 71° . Soluble in about 40 parts of *water*, and in less than 1 part of *glycerin* or of *alcohol* (90 per cent.). The aqueous solution is neutral or but slightly acid to *litmus*. When 0.5 gramme is gently warmed for a short time with 10 millilitres of *solution of sodium hydroxide*, 3 drops of *aniline* added and the mixture well shaken and heated to boiling, no odour of phenyl isocyanide is perceptible (absence of chloral hydrate).

Dose.

Metric.

3 to 12 decigrams.

Imperial.

5 to 20 grains.

CAFFEINA

Caffeine

Synonym—Theine

Caffeine, $C_8H_{10}N_4O_2 \cdot H_2O$, is an alkaloid obtained from the dried leaves of *Camellia Thea*, *Link*, or from other plants.

Characters and Tests.—Colourless, silky, acicular, inodorous crystals. Soluble in 80 parts of *water*, somewhat more soluble in *alcohol* (90 per cent.), readily soluble in *chloroform*, sparingly in *ether*. Melting point 235° . Aqueous solution neutral to *litmus* and faintly bitter. Loses part of its water of crystallisation on exposure to the air. Loss when dried at 100° not more than 8.5 per cent.; the dry alkaloid begins to volatilise at a little over that temperature and sublimes readily at about 180° . A cold saturated aqueous solution is not precipitated by *N/10 solution of iodine*, or by *solution of potassium-mercuric iodide*, but gives a white precipitate with *solution of tannic acid*, soluble in excess of the reagent. 0.1 gramme dissolves without colour in 1 millilitre of *sulphuric acid*, and also in 1 millilitre of *nitric acid*. When treated with a crystal of *potassium chlorate* and a few drops of *hydrochloric acid*, the mixture being evaporated to dryness in a porcelain dish, a reddish residue remains which becomes purple when exposed to the vapour of *solution of ammonia*.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
6 to 30 centigrams.	1 to 5 grains.

CAFFEINÆ CITRAS

Caffeine Citrate

Caffeine Citrate, $C_8H_{10}N_4O_2 \cdot C_6H_8O_7$, is an unstable compound obtained from Caffeine and Citric Acid.

Caffeine.	100 grammes
Citric Acid, in powder	100 grammes
Distilled Water	16 millilitres

Mix the Caffeine with the Citric Acid, moisten the mixture with the Distilled Water, and dry on a water-bath with constant stirring.

Characters and Tests.—A white powder with an acid reaction. Inodorous; taste acid and faintly bitter. Soluble in 4 parts of hot water, but dissociating on the further addition of water with separation of caffeine, which completely redissolves in 32 parts of water. Loses not more than 1 per cent. of its weight when dried at 100°. When 1 gramme is dissolved in hot water, the solution made alkaline with solution of sodium hydroxide and shaken with three successive portions, each of 10 millilitres, of chloroform, the chloroformic solutions, washed with a little water, leave on evaporation a residue weighing not less than 0.45 gramme, and answering to the test with potassium chlorate and hydrochloric acid described under 'Caffeina.' Caffeine Citrate yields the reactions characteristic of citrates.

Dose.

Metric.
12 to 60 centigrams.

Imperial.
2 to 10 grains.

CAFFEINÆ CITRAS EFFERVESCENS

Effervescent Caffeine Citrate

Sodium Bicarbonate, in powder	510 grammes
Tartaric Acid, in powder	270 grammes
Citric Acid, in powder	180 grammes
Refined Sugar, in powder	140 grammes
Caffeine Citrate	40 grammes

Mix the Caffeine Citrate, Tartaric Acid, and Citric Acid; with this mixture thoroughly incorporate the mixed Sodium Bicarbonate and Refined Sugar; place in a dish or pan of suitable form heated to between 95° and 105°. When the mixture, by aid of careful manipulation, has assumed a granular character, separate it into granules of uniform and convenient size by means of suitable sieves. Dry the granules at a temperature not exceeding 55°. The product weighs about one thousand grammes.

*Dose.**Metric.*

4 to 8 grammes.

Imperial.

60 to 120 grains.

CALCII CARBONAS PRÆCIPITATUS

Precipitated Calcium Carbonate

Synonym—Precipitated Chalk

Precipitated Calcium Carbonate, CaCO_3 , is obtained by the interaction of calcium chloride and sodium carbonate.

Characters and Tests.—A white microcrystalline powder, insoluble in *water*. Yields the *reactions* characteristic of calcium and of carbonates. Yields no characteristic *reactions* for iron, aluminium, phosphates, or sulphates, and not more than the slightest *reactions* for magnesium or chlorides. *Lead limit* 10 parts per million. *Arsenic limit* 5 parts per million.

*Dose.**Metric.*

1 to 4 grammes.

Imperial.

15 to 60 grains.

CALCII CHLORIDUM

Calcium Chloride

Calcium Chloride, CaCl_2 , may be obtained by neutralising hydrochloric acid with calcium carbonate, and carefully desiccating at a temperature not exceeding 200° .

Characters and Tests.—Dry, white, very deliquescent masses. Taste warm, slightly bitter. Soluble in 1·5 parts of *water*, and in 3 parts of *alcohol* (90 per cent.). Yields the *reactions* characteristic of calcium and of chlorides. Yields no characteristic *reactions* for iron, aluminium,

or carbonates, and not more than the slightest *reactions* for magnesium. *Lead limit* 20 parts per million. *Arsenic limit* 5 parts per million. Evolves no chlorine or hypochlorous acid on the addition of *hydrochloric acid* (absence of hypochlorite). Loses not more than 5 per cent. of its weight when dried at 200° .

Dose.

Metric.

3 to 10 decigrams.

Imperial.

5 to 15 grains.

CALCII HYDRAS

Calcium Hydroxide

Calcium Hydroxide, $\text{Ca}(\text{OH})_2$, recently prepared by the interaction of water and Lime.

Characters and Tests.—A soft, white powder. Yields the *reactions* characteristic of calcium. Strongly heated it loses nearly one fourth of its weight of water. Yields not more than the slightest characteristic *reactions* for iron, carbonates, chlorides, suphates, or silica. *Lead limit* 20 parts per million. *Arsenic limit* 5 parts per million.

CALCII HYPOPHOSPHIS

Calcium Hypophosphite

Calcium Hypophosphite may be obtained by the interaction of phosphorus, calcium hydroxide, and water. It contains not less than 98 per cent. of pure calcium hypophosphite, $\text{Ca}(\text{PH}_2\text{O}_2)_2$.

Characters and Tests.—A white crystalline salt, with a pearly lustre; taste bitter, nauseous. Soluble in 8 parts of *water*; insoluble in *alcohol* (90 per cent.). When strongly

heated evolves spontaneously-inflammable hydrogen phosphide and hydrogen, and leaves a reddish residue. Yields the *reactions* characteristic of calcium. Its aqueous solution yields with *T.Sol. of mercuric chloride* a white precipitate turning grey. Yields no characteristic *reactions* for copper or iron, and not more than the slightest *reactions* for chlorides or sulphates. *Lead limit* 10 parts per million. *Arsenic limit* 5 parts per million.

Contains not less than 98 per cent. of pure calcium hypophosphite, $\text{Ca}(\text{PH}_2\text{O}_2)_2$, as determined by the following process :—

Dissolve 2.5 grammes in 40 millilitres of water ; add 5 millilitres of *solution of lead acetate* and sufficient *water* to produce 50 millilitres ; shake the mixture well and allow it to stand for one hour for the precipitate to subside. To 10 millilitres of the clear liquid add 50 millilitres of *N/1 solution of potassium bichromate* and 10 millilitres of *sulphuric acid* ; heat on a water-bath for one hour, cool and add sufficient *water* to produce 250 millilitres. To 25 millilitres of this solution add 2 grammes of *potassium iodide* and titrate the iodine liberated with *N/10 solution of sodium thiosulphate*, *mucilage of starch* being used as indicator ; not more than 27 millilitres are required.

Dose.

Metric.

2 to 6 decigrams.

Imperial.

3 to 10 grains.

CALCII LACTAS

Calcium Lactate

Calcium Lactate may be obtained by neutralising dilute lactic acid with calcium carbonate and evaporating the resulting solution. It contains not less than 93 per cent. of pure calcium lactate, $\text{Ca}(\text{C}_3\text{H}_5\text{O}_3)_2 \cdot 5\text{H}_2\text{O}$.

Characters and Tests.—A white powder ; almost taste-

less. Slowly soluble in 18·5 parts of *water*, forming a clear, colourless solution. Yields the *reactions* characteristic of calcium. The aqueous solution, acidified with *sulphuric acid* and warmed with *potassium permanganate*, develops the odour of aldehyde. A solution of 5 grammes in hot *water* does not become pink on the addition of a few drops of *solution of phenolphthalein*, and requires not more than 0·5 millilitre of *N/1 solution of sodium hydroxide* to produce a pink coloration (limit of acidity). 1 gramme, treated with *sulphuric acid* and incinerated in a crucible, cooled, again treated with *sulphuric acid* and incinerated, leaves a white residue weighing not less than 0·410 and not more than 0·450 gramme. *Lead limit* 10 parts per million. *Arsenic limit* 5 parts per million.

Dose.

Metric.
6 to 20 decigrams.

Imperial.
10 to 30 grains.

CALCII PHOSPHAS

Calcium Phosphate

Calcium Phosphate may be obtained by the interaction of calcium chloride with sodium phosphate and excess of ammonia at a boiling temperature. It contains not less than 95 per cent. of pure calcium phosphate, $\text{Ca}_3(\text{PO}_4)_2$.

Characters and Tests.—A light, white, amorphous powder, permanent in the air. No odour or taste. Almost insoluble in *water*. Yields the *reactions* characteristic of calcium and of phosphates. Dissolves without residue and without effervescence (absence of carbonate) in *diluted hydrochloric acid* or *diluted nitric acid*. Yields no characteristic *reactions* for barium, ammonium, or silica, and not more than the slightest *reactions* for aluminium or magnesium. *Arsenic limit* 5 parts per million. Its solution in

slight excess of *diluted nitric acid* is not rendered more than slightly opalescent by *solution of silver nitrate* (limit of chloride), or by *solution of barium chloride* (limit of sulphates). Its solution in slight excess of *diluted hydrochloric acid* is not affected by *hydrogen sulphide*, and, on the subsequent addition of excess of *solution of ammonia*, the precipitate produced is quite white (limit of copper, iron, and lead).

Dose.

Metric.
3 to 10 decigrams.

Imperial.
5 to 15 grains.

CALUMBÆ RADIX

Calumba Root

Calumba Root is the root of *Jateorhiza Columba*, *Miers*, cut in transverse slices and dried.

Characters and Test.—In irregular, flattish, circular or oval slices depressed towards the centre, from two and a half to five centimetres or more in diameter, and from three to twelve millimetres or more in thickness, breaking with short fracture. Cork thin, brownish and wrinkled; cortex thick, yellowish and separated by a dark line from the greyish wood, in which the parenchymatous tissue is largely developed and the vessels arranged in narrow elongated groups. In the cortex, in transverse section, numerous isolated sclerenchymatous cells, with yellow, irregularly thickened walls enclosing small prismatic crystals of calcium oxalate; in the wood, vessels with yellow reticulated walls. The parenchymatous cells of both wood and cortex filled with starch grains, which are irregularly ovoid in outline, from 20 to 70 microns in length, and exhibit a conspicuous, excentric, radiate or cleft hilum. Slight odour; taste bitter. Ash not more than 9 per cent,

CALX**Lime**

Lime, CaO , is calcium oxide obtained by calcining marble.

Characters and Tests.—Compact whitish masses, which readily absorb water. When rather less than their weight of water is added, the masses swell and fall to powder with the development of much heat. The powder obtained by this process of slaking, when shaken with *water*, gives, after filtration, a clear alkaline solution which yields the reactions characteristic of calcium. Yields not more than the slightest characteristic *reactions* for iron, silica, carbonates, chlorides, or sulphates. *Arsenic limit* 5 parts per million.

CALX CHLORINATA**Chlorinated Lime**

Chlorinated Lime is obtained by exposing slaked lime to the action of chlorine gas until absorption ceases.

Characters and Tests.—A dull white powder with a characteristic chlorinous odour, becoming moist and gradually decomposing on exposure to air. Partially soluble in *water*. The solution yields the *reactions* characteristic of calcium and of chlorides, and evolves chlorine copiously upon the addition of an acid. 0.5 gramme of Chlorinated Lime, mixed with 1.5 grammes of *potassium iodide* dissolved in 200 millilitres of *water*, gives, when acidified with 6 millilitres of *hydrochloric acid*, a reddish solution, which requires for the discharge of its colour not less than 42.3 millilitres of *N/10 solution of sodium thio-sulphate*, corresponding to not less than 30 per cent. of available chlorine.

*

ORIGINAL ARTICLES

THE TREATMENT OF THE ACUTE
ARTHRITIS OF THE JOINTS
BY
DR. J. H. HARRIS
OF THE UNIVERSITY OF CHICAGO
CHICAGO, ILL.

SYMPOSIUM

THE TREATMENT OF THE ACUTE
ARTHRITIS OF THE JOINTS
BY
DR. J. H. HARRIS
OF THE UNIVERSITY OF CHICAGO
CHICAGO, ILL.

CALX SULPHURATA**Sulphurated Lime**

Sulphurated Lime is a mixture consisting chiefly of calcium sulphide and calcium sulphate. It may be obtained by heating calcium sulphate with carbon. Contains not less than 50 per cent. of calcium sulphide, CaS.

Characters and Tests.—A greyish-white powder with an odour of hydrogen sulphide; taste nauseous. Yields the *reactions* characteristic of calcium. When 0·8 gramme is mixed in a stoppered flask with a cold solution of 1·4 grammes of *copper sulphate* in 50 millilitres of *water*, and, after the addition of a little *hydrochloric acid*, the mixture is heated to a temperature approaching that of ebullition, well shaken for ten minutes, and then filtered, the filtrate gives no red colour with *solution of potassium ferrocyanide* (presence of a due proportion of sulphide).

Dose.

Metric.
16 to 60 milligrams.

Imperial.
 $\frac{1}{4}$ to 1 grain.

CAMPHORA**Camphor**

Camphor is a white crystalline substance obtained from *Cinnamomum Camphora*, *T. Nees and Eberm.*, purified by sublimation.

Characters and Tests.—Colourless, transparent crystals or crystalline masses of tough consistence; also in rectangular tablets or in pulverulent masses known as ‘flowers of camphor.’ Penetrating and characteristic odour; taste pungent and somewhat bitter, followed by a sensation of cold. Specific gravity about 0·995. Melting point about 175°.

Soluble in about 700 parts of *water*, in about 1 part of *alcohol* (90 per cent.), in 0·25 part of *chloroform*, and in 4 parts of *olive oil*; very soluble in *ether*. Burns readily with a bright smoky flame, volatilises even at ordinary temperatures, and sublimes without residue when heated. Forms a liquid when triturated with chloral hydrate, menthol, phenol, thymol and certain other substances. A solution of 5 grammes in sufficient *alcohol* (90 per cent.) to produce 20 millilitres exhibits at 15·5° an *optical rotation* of about + 10° (distinction from synthetic camphor).

Dose.

Metric.
12 to 30 centigrams.

Imperial.
2 to 5 grains.

CANNABIS INDICA

Indian Hemp

Indian Hemp consists of the dried flowering or fruiting tops of the pistillate plant of *Cannabis sativa*, *Linn.*, grown in India; from which the resin has not been removed.

Characters and Tests.—In compressed, rough, dusky-green masses, consisting of the branched upper part of the stem, bearing leaves and pistillate flowers or fruits, matted together by a resinous secretion. Upper leaves simple, alternate, 1–3 partite; lower leaves opposite and digitate, consisting of five to seven linear-lanceolate leaflets with distantly serrate margins. Fruit one-seeded and supported by an ovate-lanceolate bract. Both leaves and bracts bear external oleo-resin glands and one-celled curved hairs, the bases of which are enlarged and contain cystoliths. Strong, characteristic odour; taste slight. When a mixture of 10 grammes of finely powdered Indian Hemp and 100 millilitres of *alcohol* (90 per cent.) is shaken occasionally during twenty-four hours and then filtered,

20 millilitres of the filtrate evaporated in a flat-bottomed dish, yields a residue weighing, when dried at 100°, not less than 0.250 gramme. Ash not more than 15 per cent.

CANTHARIDINUM

Cantharidin

Cantharidin, $C_{10}H_{12}O_4$, may be obtained from various species of *Cantharis* or *Mylabris*.

Characters and Tests.—Colourless glistening crystals, inodorous. Very slightly soluble in *water*, *petroleum spirit*, or *alcohol* (90 per cent.); more soluble in *chloroform*, in *acetic ether*, and in *acetone*; soluble also in fixed oils. A 0.1 per cent. solution in a fixed oil raises blisters when kept in contact with the skin. Melting point 210° to 212°. Slowly volatilises at 100°, more rapidly at higher temperatures. Soluble in *solution of sodium hydroxide*, the solution depositing crystals of Cantharidin when acidified. Gently warmed with *sulphuric acid* it yields a colourless solution, from which it is separated unchanged when freely diluted with *water*.

CAPSICI FRUCTUS

Capsicum

Capsicum is the dried ripe fruit of *Capsicum minimum*, *Roxb.*

Characters and Test.—Dull orange-red, oblong-conical, obtuse, two-celled fruits, from about twelve to twenty millimetres in length and about six millimetres in diameter; sometimes attached to a five-toothed inferior calyx, and long, straight, slender peduncle. Pericarp somewhat shrivelled, glabrous, translucent and leathery, containing from ten to twenty small flat seeds, either loose or attached to a thin reddish dissepiment. The cells of the outer

epidermis of the pericarp have moderately thick walls, are often arranged in rows of five to seven, and exhibit a uniformly striated cuticle (distinction from the fruits of other species of capsicum). Characteristic odour; taste intensely pungent. Ash not more than 7 per cent.

CARBO LIGNI

Wood Charcoal

Wood Charcoal is wood charred by exposure to a red heat without access of air.

Characters and Tests.—A black powder without odour or taste, free from gritty matter. When 1 gramme of the Charcoal is boiled for a few minutes with 5 millilitres of solution of sodium hydroxide diluted with 15 millilitres of water and the mixture filtered, the colour of the filtrate is not deeper than pale yellow, (absence of insufficiently carbonised wood). Ash not more than 7·5 per cent.

CARBON DISULPHIDUM

Carbon Disulphide

Synonym—Carbon Bisulphide

Carbon Disulphide, CS_2 , may be obtained by combining carbon and sulphur at a high temperature, the product being subsequently condensed and purified.

Characters and Tests.—A clear, colourless, highly refractive liquid. Odour characteristic but not fetid. Specific gravity 1·268 to 1·269. Highly inflammable, burning with a blue flame and giving off carbon dioxide and sulphur dioxide. Boiling point 46° to 47° . Vapour mixed with air is explosive in contact with flame. Evaporated spontaneously in a glass vessel, it leaves no residue (absence of free sulphur).

CARDAMOMI SEMINA**Cardamom Seeds**

Cardamom Seeds are the dried ripe seeds of *Elettaria Cardamomum*, *Maton*. The seeds should be kept in their pericarps and separated when required for use.

Characters and Test.—Fruits from one to two centimetres long, ovoid or oblong, bluntly triangular in section, shortly beaked at the apex, pale buff in colour, plump and nearly smooth or with slight longitudinal striations. Seeds dark reddish-brown, about three millimetres in length and the same in breadth and thickness, irregularly angular, transversely wrinkled, and enclosed in a thin, colourless, membranous aril. The powdered Seeds exhibit abundant, minute, angular starch grains, often compacted into masses; but no spiral vessels, sclerenchymatous fibres, or strongly elongated sclerenchymatous cells (absence of pericarps). Aromatic odour; taste agreeably warm and aromatic. Ash not more than 6 per cent.

CARUI FRUCTUS**Caraway Fruit**

Caraway Fruit is the dried ripe fruit of *Carum Carvi*, *Linn.*

Characters and Test.—Mericarps usually separate; each from about four to six millimetres long and about one millimetre broad; brown with paler primary ridges; slightly curved, tapering towards each end, and glabrous. In transverse section, six vittæ in each mericarp. Odour and taste aromatic. Ash not more than 9 per cent.

CARYOPHYLLUM.**Cloves**

Cloves are the dried flower-buds of *Eugenia caryophyllata*, *Thunb.*

Characters and Tests.—About fifteen millimetres long, each consisting of a dark-brown, wrinkled, subcylindrical, somewhat angular calyx tube which tapers below and is surmounted by four thick, rigid, patent teeth, between which are four paler, imbricated petals enclosing numerous stamens and a single style. Odour strong, fragrant and spicy; taste very pungent and aromatic. Cloves emit oil when indented with the finger-nail. Ash not more than 7 per cent.

CASCARA SAGRADA**Cascara Sagrada**

Synonym—*Rhamni Purshiani Cortex*

Cascara Sagrada is the dried bark of *Rhamnus Purshianus*, *DC.*, collected at least one year before being used.

Characters and Test.—In quilled, channelled, or nearly flat pieces from one to two millimetres thick, but varying in length and width. Cork nearly smooth, dark purplish-brown, marked with transversely elongated lenticels, but usually more or less covered with patches of silvery grey lichen. Inner surface reddish brown, with faint transverse corrugations and longitudinal striations. Fracture short, but near the inner surface somewhat fibrous. In transverse section, scattered groups of sclerenchymatous cells in both cortex and bast; the parenchymatous cells contain a yellow substance which is coloured violet by *solution of sodium hydroxide*. Odour characteristic but not powerful; taste nauseous, bitter and persistent.

CASCARILLA**Cascarilla**

Cascarilla is the dried bark of *Croton Eluteria*, *J. J. Benn.*

Characters and Test.—In quills usually from three to ten centimetres in length and from four to twelve millimetres in diameter, or in small curved pieces. Cork greyish-white, easily detached, and often more or less completely removed disclosing a dull brown cortex. Both cork and cortex frequently marked with numerous longitudinal and transverse cracks. Fracture short, the fractured surface exhibiting under a lens a dark reddish-brown bast traversed by numerous, thin, whitish medullary rays. In transverse section cork cells with strongly thickened outer walls, but thin inner walls, in which minute crystals of calcium oxalate are embedded; both cortex and bast free from sclerenchymatous cells. Aromatic odour, especially when burned; taste aromatic and bitter. Ash not more than 11 per cent.

CASSIÆ FRUCTUS**Cassia Pods**

Cassia Pods are the ripe fruits of *Cassia Fistula*, *Linn.*

Characters.—Long, narrow, cylindrical, shortly stalked fruits about thirty-five to fifty centimetres in length, and fifteen to twenty-five millimetres in diameter. Pericarp nearly smooth, dark chocolate-brown or nearly black, thin and hard. Internally divided by thin transverse dissepiments into numerous compartments, each of which contains a smooth, oval, reddish-brown seed surrounded by a nearly black, sweet pulp.

CASSIÆ PULPA**Cassia Pulp**

Exhaust crushed Cassia Pods by percolation with Distilled Water; strain; evaporate on a water-bath to the consistence of a soft extract.

CATECHU**Catechu**

Synonym—Catechu Pallidum

Catechu is an extract of the leaves and young shoots of *Uncaria Gambier*, *Roxb.*

Characters and Tests.—In cubes, sometimes more or less agglutinated, each side measuring about twenty-five millimetres. Dark reddish-brown externally, pale cinnamon-brown internally, porous and friable. When examined under the microscope they are found to consist chiefly of minute acicular crystals. No odour; taste at first bitter and very astringent, but subsequently sweetish. Almost entirely soluble in boiling water. Not less than 80 per cent. is soluble in alcohol (90 per cent.); the alcoholic solution made strongly alkaline with solution of sodium hydroxide and shaken with petroleum spirit imparts to the latter a brilliant green fluorescence (distinction from Black Catechu); the residue insoluble in alcohol exhibits no starch grains when examined under the microscope. Ash not more than 5 per cent.; ash of the powder not more than 8 per cent.

*Dose.**Metric.*

3 to 10 decigrams.

Imperial.

5 to 15 grains.

CATECHU NIGRUM**Black Catechu**

Black Catechu is an extract prepared from the wood of *Acacia Catechu*, Willd.

Characters and Tests.—In irregular masses of a dark brown colour, brittle, having a porous, glossy, somewhat conchoidal fracture. Partially soluble in cold *water*, almost entirely soluble in boiling *water*. Not less than 60 per cent. is soluble in *alcohol* (90 per cent.). No odour; taste sweetish, astringent. Its dilute aqueous solution gives a dark green colour with *T.Sol. of ferric chloride*, changing to purple when made slightly alkaline with *solution of sodium hydroxide*. Ash not more than 5 per cent.; ash of the powder not more than 8 per cent.

*Dose.**Metric.*

3 to 10 decigrams.

Imperial.

5 to 15 grains.

In India, in the Eastern and in the North American Divisions of the Empire, Black Catechu may be employed in making the official preparations for which Catechu is directed to be used.

CERA ALBA**White Beeswax**

White Beeswax is Yellow Beeswax, bleached.

Characters and Tests.—Hard, nearly white, translucent cakes or masses. 5 grammes heated with a mixture of 10 millilitres of *alcohol* (90 per cent.) and 10 millilitres of *absolute alcohol*, and shaken until evenly distributed, require for neutralisation at boiling temperature not less than 1.5 and not more than 2.2 millilitres of *N/1 alcoholic solution of potassium hydroxide*, *solution of phenolphthalein* being used as indicator (limits of free acid).

In other respects White Beeswax responds to the tests described under '*Cera Flava*.'

CERA FLAVA

Yellow Beeswax

Yellow Beeswax is obtained from the honeycomb of the Hive Bee, *Apis mellifica*, *Linn.*, and possibly other species.

Characters and Tests.—A yellowish-brown solid; somewhat brittle when cold, but becoming plastic by the heat of the hand. Agreeable, honey-like odour. Fracture granular, not crystalline. Soluble in *chloroform*, and in fixed and volatile oils. Specific gravity 0.958 to 0.970. Melting point 61° to 64°. *Refractive index* at 80° 1.4380 to 1.4420. When 5 grammes are boiled for ten minutes with 80 millilitres of a 10 per cent. aqueous solution of *sodium hydroxide*, the loss by evaporation being replaced, the aqueous solution, cooled, and filtered through a plug of asbestos, does not become turbid when acidified with *hydrochloric acid* (absence of fats, fatty acids, Japan wax, resin). 5 grammes heated with 20 millilitres of *absolute alcohol*, and shaken until uniformly distributed, require for neutralisation at boiling temperature not less than 1.5 and not more than 2.0 millilitres of *N/1 alcoholic solution of potassium hydroxide*, *solution of phenolphthalein* being used as indicator (limits of free acid). Upon the further addition of 20 millilitres of *N/1 alcoholic solution of potassium hydroxide*, and on well boiling for one and a quarter hours in a flask to which a reflux condenser is attached, not less than 13.2 and not more than 13.8 millilitres of *N/1 solution of sulphuric acid* are required for neutralisation. When 5 grammes are boiled with a mixture of 15 millilitres of *N/1 alcoholic solution of potassium hydroxide* and 15 millilitres of *absolute alcohol* until completely saponified, the alcohol evaporated, the residue dissolved in 20 millilitres of *glycerin* on a water-bath and 80 millilitres of boiling *water* added, a clear or translucent solution is obtained (absence of ceresin, paraffin and other waxes). Not more than 1 per cent. is soluble in boiling *water* (limit of honey.)

CETACEUM

Spermaceti

Spermaceti is a solid wax obtained from the Sperm Whale, *Physeter macrocephalus*, *Linn.*, and possibly other species.

Characters and Tests.—Translucent, pearly-white, glistening masses, with a leafy, crystalline structure; slightly unctuous to the touch. Almost inodorous. Specific gravity 0.950 to 0.960; *acid value* not more than 1.0; *saponification value* 125 to 136; *iodine value* 3 to 4.4; *refractive index* at 80° about 1.4330. Soluble in 50 parts of hot *alcohol* (90 per cent.), the greater proportion separating again in thin laminæ on cooling. Reducible to powder with the aid of a little *alcohol* (90 per cent.). When 1 gramme is boiled with 10 millilitres of *alcohol* (90 per cent.) for one minute, and the mixture cooled to, and filtered at 0°, the filtrate may become opalescent, but does not afford a precipitate when poured into *water* (absence of stearic acid).

CHIRATA

Chiretta

Chiretta is the plant, *Swertia Chirata*, *Buch.-Ham.*, collected when in flower, and dried.

Characters.—Stem about one metre long, smooth, brown or purplish-brown, slightly winged and much branched above, rounded below and containing a large, continuous, easily separable pith. Root oblique. Branches slender, elongated, decussate. Leaves opposite, ovate, glabrous, entire, usually with three to seven lateral veins. Flowers small, numerous, panicled. Fruits superior, bicarpellary, unilocular. No odour; taste extremely bitter.

CHLORAL FORMAMIDUM**Chloral Formamide**

Synonym—Chloralamide

Chloral Formamide, $C_3H_4Cl_3NO_2$, may be obtained by the direct combination of formamide with anhydrous chloral. Should be preserved in amber-coloured bottles.

Characters and Tests.—Colourless lustrous crystals. No odour; taste slightly bitter. Soluble in 21 parts of *water*; very soluble in *alcohol* (90 per cent.), the solution being neutral to *litmus*; very soluble in *ether*; slowly soluble in 12 parts of *glycerin*. Melting point 114° to 115° ; decomposes at a higher temperature. Hydrolyses in aqueous solution at 60° , yielding chloral hydrate and formamide. Unaffected by dilute acids, but decomposed when warmed with *solution of sodium hydroxide*, chloroform separating and ammonia and sodium formate being produced. Heated with free access of air it volatilises completely without the evolution of inflammable vapours (absence of certain organic impurities). Its solution in *alcohol* (90 per cent.) is not immediately altered in appearance by *solution of silver nitrate* (absence of certain decomposition products).

Dose.

Metric.

1 to 3 grammes.

Imperial.

15 to 45 grains.

CHLORAL HYDRAS**Chloral Hydrate**

Chloral Hydrate, $C_2Cl_3H_3O_2$, may be obtained by the addition of water to the liquid chloral, C_2Cl_3HO , produced by the action of dry chlorine gas on ethylic alcohol.

Characters and Tests.—In colourless, non-deliquescent,

monoclinic plates. Pungent, but not acrid odour; taste pungent and rather bitter. Soluble in less than 1 part of *water*, *alcohol* (90 per cent.), or *ether*, and in 3 parts of *chloroform*. Aqueous solution neutral or only slightly acid to *litmus*. Melting point 49° to 53° ; at a slightly higher temperature it volatilises without residue. Decomposed by alkalis with liberation of chloroform. A solution in *chloroform*, shaken with *sulphuric acid*, imparts no colour to the acid (absence of certain organic impurities). When 1 gramme of Chloral Hydrate is warmed with 6 millilitres of *water* and 0.5 millilitre of *solution of sodium hydroxide*, the mixture filtered, sufficient *N/10 solution of iodine* added to impart a deep brown colour, and the whole set aside for an hour, no yellow crystalline precipitate is produced (absence of chloral alcoholate). Its aqueous solution yields no precipitate with *solution of silver nitrate* (absence of free chlorides).

Dose.

Metric.

3 to 12 decigrams.

Imperial.

5 to 20 grains.

CHLOROFORMUM

Chloroform

Chloroform is trichlormethane, CHCl_3 , to which 2 per cent. of Absolute Alcohol has been added. It may be obtained from ethylic alcohol, industrial methylated spirit, or acetone, by heating with chlorinated lime, slaked lime, and distilled water, and subsequent purification. Should be kept cool and in a dark place.

Characters and Tests.—A colourless liquid of characteristic odour; taste pungent, sweet. Specific gravity 1.490 to 1.495. Boiling point between 60° and 62° . On allowing 10 millilitres to evaporate from a large piece of filter paper placed on a warm plate, no extraneous odour is perceptible at any stage of the evaporation. *Water* which has been

shaken for five minutes with half its volume of Chloroform, and separated from the undissolved Chloroform, is neutral to *litmus* (absence of acid), does not give any colour with 1 millilitre of *solution of cadmium iodide* and 2 drops of *mucilage of starch* (absence of free chlorine), and yields not more than a very slight opalescence with 4 drops of *solution of silver nitrate* (absence of chlorides). After shaking *sulphuric acid* with twice its volume of Chloroform for five minutes, and setting aside for fifteen minutes, both the *acid* and the Chloroform are nearly colourless. 2 millilitres taken from the layer of *sulphuric acid*, and diluted with 5 millilitres of *water*, remain very nearly colourless, and have a pleasant odour. When this acid liquid is further diluted with 10 millilitres of *water*, and stirred with a glass rod, it is transparent and colourless, and the addition of 4 drops of *solution of silver nitrate* causes not more than a slightly diminished transparency. *Water* which has been shaken with half its volume of Chloroform, previously treated with *sulphuric acid* as described above, yields not more than a slightly diminished transparency with *solution of silver nitrate*. Evaporates without residue (absence of fixed matter).

Dose.

Metric.

6 to 30 centimils.

Imperial.

1 to 5 minims.

CHRY SAROBINUM

Chrysarobin

Chrysarobin is a mixture of substances extracted from Araroba by hot benzene. It consists of a definite chemical compound, $C_{15}H_{12}O_3$, also known as pure chrysarobin, associated with other substances.

Characters and Tests.—A light, microcrystalline, yellowish powder; inodorous; tasteless. Entirely soluble in hot *chloroform* and in hot *benzene*, almost entirely soluble in hot

alcohol (90 per cent.), partially and sparingly soluble in *petroleum spirit*, almost insoluble in *water*. Almost entirely soluble in hot *solution of sodium hydroxide*, with production of a deep brownish-red colour. Shaken with *solution of ammonia* the liquid slowly becomes violet. About 1 milligramme mixed on a white tile with a drop of fuming *nitric acid* produces a brownish-red liquid, becoming violet on the addition of excess of *solution of ammonia*. Melts when heated, giving off yellow fumes. Ash not more than 1 per cent.

CINCHONÆ RUBRÆ CORTEX

Red Cinchona Bark

Red Cinchona Bark is the dried bark of the stem and branches of cultivated plants of *Cinchona succirubra*, Pav.

Characters and Tests.—In quilled or curved pieces, length varying from five to thirty centimetres, or more; usually from about two and a half to six millimetres thick; cork brownish or reddish-brown, with longitudinal ridges which are most apparent in the branch bark, and sometimes with reddish warts; inner surface brick-red or deep reddish-brown, irregularly and coarsely striated; fracture shortly fibrous in the smaller, and finely fibrous in the larger, pieces. In transverse section in the cortex, cells filled with sandy crystals of calcium oxalate and also large secretion tubes; in the bast numerous, large, strongly-thickened fibres usually 50 to 70 microns wide and about 1000 microns long, isolated or in small groups. The powdered Bark brownish or reddish-brown, exhibits abundant parenchymatous tissue with brownish cell-walls, and often with brownish contents, small starch grains, and large isolated bast fibres about 60 microns in diameter, with distinctly striated walls. No marked odour; taste bitter and somewhat astringent.

When used for official purposes other than the prepar-

ation of the alkaloids or their salts, Red Cinchona Bark yields between 5 and 6 per cent. of total alkaloids, of which not less than one-half consists of quinine and cinchonidine, as determined by the following process:—

Mix 10 grammes of Red Cinchona Bark, in No. 60 powder, with 6 grammes of *calcium hydroxide*; add 22 millilitres of *water*, mix intimately in a small porcelain dish or mortar and set aside for an hour or two. Transfer this mixture to a suitable flask fitted with a reflux condenser, add 130 millilitres of *benzolated amylic alcohol*, boil for about half an hour, and then decant the liquid on to a filter, leaving the sediment in the flask; add more of the *benzolated amylic alcohol* to the sediment, and boil and decant as before; repeat this operation a third time; then transfer the contents of the flask to the filter, and wash by percolation with more of the *benzolated amylic alcohol* until the Bark is exhausted. Introduce the collected filtrate, while still warm, into a stoppered glass separator; add to it 2 millilitres of *diluted hydrochloric acid*, mixed with 12 millilitres of *water*; shake well together, and allow them to separate; draw off the acid liquid, and repeat the process with *water* slightly acidified with *hydrochloric acid*, until the alkaloids have been completely removed. Carefully and exactly neutralise the acid liquid, while warm, with *solution of ammonia*, and concentrate by evaporation to the bulk of 16 millilitres. To the concentrated solution add about 1.5 grammes of *sodium potassium tartrate*, dissolved in twice its weight of *water*, stirring with a glass rod; after about one hour collect the precipitate, wash, dry at 100° and weigh; the weight multiplied by 8 gives the percentage weight of quinine and cinchonidine in the Bark. To the mother-liquor and washings from the preceding process add *solution of ammonia* in slight excess and shake with three successive portions of 10 millilitres of *chloroform*; evaporate the mixed chloroformic solutions to dryness, dry the residue at 110° and weigh. The weight multiplied by 10 and added to the percentage weight of the quinine and cinchonidine, gives the percentage weight of total alkaloids.

CINNAMOMI CORTEX

Cinnamon Bark

Cinnamon Bark is the dried inner bark of shoots from the truncated stocks of *Cinnamomum zeylanicum*, *Breyn.* Obtained from cultivated trees. Imported from Ceylon, and distinguished in commerce as Ceylon cinnamon.

Characters and Test.—In closely rolled quills, each about nine millimetres in diameter, and containing numerous smaller quills or channelled pieces. Dull, pale yellowish-brown, darker on the inner surface; thin, brittle and splintery; entirely free from cork; marked with small scars or holes and with faint, shining, wavy longitudinal lines. The powdered Bark exhibits abundant parenchymatous tissue with brown cell-walls, isolated bast-fibres not more than 30 microns in diameter, small simple or compound starch grains and thick-walled sclerenchymatous cells; but no cork or fragments of wood. Fragrant odour; taste warm, sweet and aromatic. Ash not more than 5 per cent.

COCAINA

Cocaine

Cocaine, $C_{17}H_{21}NO_4$, is an alkaloid obtained from the leaves of *Erythroxylum Coca*, *Lam.*, and its varieties.

Characters and Tests.—In colourless monoclinic prisms. No odour; taste bitter, followed by a sensation of tingling and numbness. Soluble in 10 parts of *alcohol* (90 per cent.), in 4 parts of *ether*, in 0.5 part of *chloroform*, and in 24 parts of *olive oil*; almost insoluble in *water*. Melting point 98° . The dry salt obtained by dissolving Cocaine in *water* acidified with *hydrochloric acid* and evaporating the solution, answers to the tests described under 'Cocainæ Hydrochloridum.'

COCAINÆ HYDROCHLORIDUM

Cocaine Hydrochloride

Cocaine Hydrochloride, $C_{17}H_{21}NO_4 \cdot HCl$, is the hydrochloride of the alkaloid cocaine.

Characters and Tests.—In colourless prismatic crystals, or a crystalline powder. No odour; taste bitter, followed by a sensation of tingling and numbness. Soluble in 0.5 part of *water*, and in 3 parts of *alcohol* (90 per cent.); insoluble in *olive oil*. Melting point 182° to 186° . Yields the *reactions* characteristic of chlorides. An aqueous solution is neutral to *litmus*, and when applied to the eye dilates the pupil. When moistened with *nitric acid*, the mixture evaporated to dryness, and 1 millilitre of *alcoholic solution of potassium hydroxide* added, a characteristic odour is evolved, recalling peppermint. The addition of 3 drops of *N/10 solution of potassium permanganate* to a solution of 0.1 gramme of the salt in 5 millilitres of *water* to which 3 drops of *diluted sulphuric acid* have been added, gives a violet colour, which, if dust is excluded, does not fade in half an hour (absence of cinnamyl-cocaine and certain other coca alkaloids). If 0.1 gramme is dissolved in 100 millilitres of *water* in a glass beaker, 0.25 millilitre of *solution of ammonia* stirred in, and the mixture set aside for fifteen minutes, the sides of the beaker being occasionally and not too vigorously rubbed with a glass rod, a crystalline deposit separates, leaving the supernatant liquid clear (limit of amorphous alkaloid). 0.05 gramme dissolves in 1 millilitre of cold *sulphuric acid* or cold *nitric acid* without coloration, but with hot *sulphuric acid* the salt chars, evolving an agreeable odour and yielding a sublimate of benzoic acid. Loses not more than 1 per cent. of its weight when dried at 100° . No appreciable ash.

Dose.

Metric.
6 to 16 milligrams.

Imperial.
 $\frac{1}{10}$ to $\frac{1}{4}$ grain.

COCCUS

Cochineal

Cochineal is the dried fecundated insect, *Coccus cacti*, Linn.

Characters and Tests.—About five millimetres long; somewhat oval in outline, flat or concave beneath, convex above, transversely wrinkled, purplish-black or purplish-grey; easily reduced to powder, which is dark-red or puce-coloured. Macerated in *water*, no insoluble powder is separated. Ash not more than 6 per cent.

CODEINA

Codeine

Codeine, $C_{18}H_{21}NO_3 \cdot H_2O$, is an alkaloid obtained from opium or prepared from morphine.

Characters and Tests.—Colourless or nearly colourless crystals. Soluble in 80 parts of *water*, and in 80 parts of *solution of ammonia*, readily soluble in *alcohol* (90 per cent.), and in *chloroform*. The aqueous solution has a bitter taste and an alkaline reaction. Melting point 155° to 156° . 0.1 gramme dissolves in 1 millilitre of cold *sulphuric acid* without coloration or with the production at most of a faint pink tinge; but when the solution is gently warmed with a trace of *ammonium molybdate* or of *ferric chloride* a deep bluish-violet colour is developed which, on the addition of a drop of *diluted nitric acid*, changes to scarlet and finally orange. When a little of the powdered alkaloid is sprinkled on *nitric acid* the liquid becomes yellow but not red (distinction from morphine). A saturated aqueous solution, acidified with *hydrochloric acid*, gives no blue colour, but only gradually a dull green, on the addition of diluted *T.Sol. of ferric chloride* and very dilute *solution of potassium ferricyanide* (absence of morphine). A 2 per cent. solution

in *water* acidified with *hydrochloric acid* yields a white precipitate with *solution of sodium hydroxide*, but not with *solution of ammonia*.

*Dose.**Metric.*

16 to 60 milligrams.

Imperial. $\frac{1}{4}$ to 1 grain.

CODEINÆ PHOSPHAS

Codeine Phosphate

Codeine Phosphate, $C_{18}H_{21}NO_3 \cdot H_3PO_4 \cdot 2H_2O$, is the phosphate of the alkaloid codeine.

Characters and Tests.—White efflorescent crystals. Taste slightly bitter. Soluble in 3·5 parts of *water*. A 5 per cent. aqueous solution has a slightly acid reaction and yields a white precipitate with *solution of sodium hydroxide*, but not with *solution of ammonia*. Loses its water of crystallisation at 100° . Yields the *reactions* characteristic of phosphates, and responds to the colour-tests described under 'Codeina.'

*Dose.**Metric.*

16 to 60 milligrams.

Imperial. $\frac{1}{4}$ to 1 grain.

COLCHICI CORMUS

Colchicum Corm

Colchicum Corm is the fresh corm of *Colchicum autumnale*, *Linn.*, collected in early summer; and the same deprived of its coats, sliced transversely, and dried at a temperature not exceeding 65° .

Characters.—Fresh corm about thirty-five millimetres long and twenty-five millimetres broad, somewhat conical, hollowed on one side where a new corm is in process of development, and rounded on the other; covered with an outer thin brown membranous coat, and an inner reddish-yellow one; internally white and solid, and when cut yielding a whitish, turbid juice of a disagreeable odour and bitter taste. Dried slices two or three millimetres thick, yellowish at their circumference, somewhat reniform in outline; firm, whitish, amylaceous; breaking readily with a short fracture. No odour; taste bitter.

COLCHICI SEMINA

Colchicum Seeds

Colchicum Seeds are the dried ripe seeds of *Colchicum autumnale*, *Linn.*

Characters.—About two and a half millimetres in diameter, subglobular, slightly pointed at the hilum, rough and of a dull reddish-brown colour, minutely pitted, very hard and tough. Endosperm oily; its cells with thickened walls and large pits. No odour; taste bitter and acrid.

COLLODIUM

Collodion

Pyroxylin	21 grammes
Ether	750 millilitres
Alcohol (90 per cent.)	250 millilitres

Immerse the Pyroxylin in the Alcohol; add the Ether, shake occasionally until dissolved; set aside for a few days; decant if necessary.

Characters.—A colourless, highly inflammable liquid of

syrupeous consistence and ethereal odour. Dries quickly upon exposure to the air, and leaves a thin transparent film, which contracts rapidly on drying and is insoluble in *water* or *alcohol* (90 per cent.)

COLLODIUM FLEXILE

Flexible Collodion

Collodion	940 millilitres
Canada Turpentine	40 grammes
Castor Oil	20 grammes

Mix.

COLLODIUM VESICANS

Blistering Collodion

Pyroxylin	25 grammes
Cochineal, in powder	10 grammes
Blistering liquid sufficient to produce	1000 millilitres

Shake together until the Pyroxylin is dissolved, set aside till clear, and decant the clear liquid.

COLOCYNTHIDIS PULPA

Colocynth Pulp

Colocynth Pulp is the dried pulp of the fruit of *Citrullus Colocynthis*, *Schrad.*, freed from seeds.

Characters and Tests.—White, spongy, light fragments. The powdered Pulp exhibits abundant debris of large, thin-walled parenchymatous cells but no starch, and not more than an occasional sclerenchymatous cell or group of such cells. No odour; taste intensely bitter. Yields not more than 2 per cent. of fixed oil to *petroleum spirit*. Ash not less than 9 per cent.

CONFECTIO PIPERIS**Confection of Pepper**

Black Pepper of commerce, in	
powder	100 grammes
Caraway Fruit, in powder	150 grammes
Purified Honey	750 grammes

Mix.

Dose.

Metric.

4 to 8 grammes.

Imperial.

60 to 120 grains.

CONFECTIO ROSÆ GALLICÆ**Confection of Roses**

Fresh Red-Rose Petals	250 grammes
Refined Sugar	750 grammes

Beat together in a stone mortar.

CONFECTIO SENNÆ**Confection of Senna**

Senna Leaves, in powder	100 grammes
Coriander Fruit, in powder	40 grammes
Figs of commerce	160 grammes
Tamarinds	120 grammes
Cassia Pulp	120 grammes
Prunes of commerce	80 grammes
Extract of Liquorice	15 grammes
Refined Sugar	400 grammes
Distilled Water sufficient to pro- duce	1000 grammes

Boil the figs and prunes gently with three hundred and fifty grammes of Distilled Water in a covered vessel for four hours; add more Distilled Water to make up the quantity to its original weight, and then incorporate the Tamarinds and Cassia Pulp; digest for two hours; rub the softened pulp of the fruits through a hair sieve, rejecting the seeds and other hard parts; to the pulp thus obtained add the Refined Sugar and Extract of Liquorice, dissolving them by the aid of gentle heat; while the mixture is still warm, add to it gradually the mixed Senna and Coriander powders; mix the whole thoroughly; make the weight of the resulting Confection one thousand grammes, either by evaporation or by the addition of more Distilled Water.

*Dose.**Metric.*

4 to 8 grammes.

Imperial.

60 to 120 grains.

CONFECTIO SULPHURIS

Confection of Sulphur

Precipitated Sulphur . . .	450 grammes
Acid Potassium Tartrate, in powder . . .	110 grammes
Tragacanth, in powder . . .	5 grammes
Syrup . . .	210 millilitres
Tincture of Orange . . .	55 millilitres
Glycerin . . .	170 millilitres

Mix.

*Dose.**Metric.*

4 to 8 grammes.

Imperial.

60 to 120 grains.

COPAIBA

Copaiba

Copaiba is the oleo-resin obtained by incision from the trunk of various species of *Copaifera*, *Linn.*

Characters and Tests.—A more or less viscous liquid, generally transparent and occasionally fluorescent, yellow to golden brown. Specific gravity 0.975 to 0.995. Entirely soluble in *absolute alcohol*; soluble in four times its volume of *petroleum spirit*, the solution yielding only a slight filmy deposit on standing. Aromatic, characteristic odour; taste acrid, somewhat bitter, persistent. Loses about 45 per cent. of its weight when dried for forty-eight hours at 100°. Forms a transparent solution with one-third of its volume of *solution of ammonia*. Four drops carefully added to a mixture of 5 millilitres of *glacial acetic acid* with four drops of *nitric acid* do not yield a purplish or violet colour (absence of *gurjun balsam*). 1 gramme dissolved in 25 millilitres of *absolute alcohol* requires for neutralisation not less than 2.7 millilitres of *N/2 alcoholic solution of potassium hydroxide*, *solution of phenolphthalein* being used as indicator (presence of a due proportion of acid resins.) The volatile oil distilled from it responds to the tests for '*Oleum Copaibæ*'.

Dose.

Metric.
2 to 4 mls.

Imperial.
 $\frac{1}{2}$ to 1 fluid drachm.

CORIANDRI FRUCTUS

Coriander Fruit

Coriander Fruit is the dried ripe fruit of *Coriandrum sativum*, *Linn.*

Characters.—Nearly globular, about five millimetres in diameter, uniform brownish-yellow in colour, and glabrous. Mericarps usually closely united, and crowned by the calyx teeth and stylopod. Primary ridges wavy and inconspicuous; secondary ridges straight and more prominent. In transverse section, two vittæ on the commissural surface of each mericarp. Aromatic odour, especially when bruised; taste agreeable.

CREOSOTUM

Creosote

Creosote is a mixture of phenols which may be obtained by the distillation of beech tar, and consists chiefly of guaiacol and cresol.

Characters and Tests.—A colourless or pale yellow, highly refractive liquid, neutral or faintly acid to *litmus*. Freely soluble in *alcohol* (90 per cent.), in *ether*, in *chloroform*, and in *glacial acetic acid*. Specific gravity not below 1.080. Commences to boil below 200°. Not less than 75 per cent. distils between 200° and 220°. A 1 per cent. solution in *alcohol* (90 per cent.) produces with a drop of *T.Sol. of ferric chloride* a green coloration rapidly changing to reddish brown. Dropped on white filter paper and exposed to a temperature of 100° it leaves no translucent stain (absence of less volatile liquids).

Dose.

Metric.
6 to 30 centimils.

Imperial.
1 to 5 minims.

CRESOL

Cresol

Cresol is a mixture of isomers of the formula C_7H_7OH , obtained from coal tar. Should be preserved in stoppered amber-coloured bottles.

Characters and Tests.—A straw-coloured liquid, becoming brown on keeping or on exposure to light. Soluble in 50 parts of *water*, the solution being neutral to *litmus*; freely soluble in *alcohol* (90 per cent.), in *ether*, in *chloroform*, in *glycerin*, and in the fixed and volatile oils. Specific gravity 1·045 to 1·050. When 0·5 millilitre is shaken with 300 millilitres of *water* and filtered, the filtrate gives a transient bluish colour on the addition of *T.Sol. of ferric chloride*. Not less than 90 per cent. distils between 195° and 205°. 10 millilitres shaken with 10 millilitres of a 10 per cent. aqueous solution of *sodium hydroxide* form an almost clear liquid, from which no appreciable oily layer separates on standing for twenty-four hours (limit of hydrocarbon oils). 5 millilitres mixed with 5 millilitres of *glycerin* form a clear solution from which, on the addition of 5 millilitres of *water*, the cresol completely separates (absence of phenol).

Dose.

Metric.

6 to 18 centimils.

Imperial.

1 to 3 minims.

CRETA PRÆPARATA

Prepared Chalk

Prepared Chalk is native calcium carbonate, freed from most of its impurities by elutriation.

Characters and Tests.—White friable masses or a white powder. Yields the *reactions* characteristic of calcium and of carbonates. Yields not more than the slightest characteristic *reactions* for iron, aluminium, magnesium, phosphates, sulphates, or silica. *Arsenic limit* 5 parts per million. A solution of Prepared Chalk in *diluted acetic acid* yields no precipitate with *solution of potassium chromate* (absence of barium carbonate).

Dose.

Metric.

1 to 4 grammes.

Imperial.

15 to 60 grains.

CUBEBAE FRUCTUS

Cubebs

Cubebs are the dried full-grown unripe fruits of *Piper Cubeba*, *Linn. fil.*

Characters and Tests.—Nearly globular, about four millimetres in diameter, greyish-brown or nearly black. Pericarp reticulately wrinkled, thin, brittle, and abruptly prolonged at the base into a slender, rounded stalk about one and a half times as long as the globular portion. Seed almost spherical, sometimes much shrivelled, attached by the base. In the transverse section of the pericarp two layers of sclerenchymatous cells, one near the outer, the other near the inner surface, those of the latter being radially elongated and usually arranged in a single row. Strong, aromatic, and characteristic odour; taste warm, aromatic, and somewhat bitter. When 2 grammes of the powdered Fruit are macerated with 20 millilitres of *ether* for twenty-four hours, and shaken occasionally, 10 millilitres of the clear ethereal solution, allowed to evaporate in a flat-bottomed dish, yields a residue which, dried for one hour in a desiccator over *sulphuric acid*, weighs not less than 0.200 gramme. The crushed Fruit imparts a crimson colour to *sulphuric acid*. Ash not more than 8 per cent.

Dose.

Metric.
2 to 4 grammes.

Imperial.
30 to 60 grains.

CUCURBITÆ SEMINA PRÆPARATA

Melon Pumpkin Seeds

Melon Pumpkin Seeds are the prepared fresh ripe seeds of cultivated plants of *Cucurbita maxima*, *Duch.* Melon

Pumpkin Seeds must not be more than one month old, and when required for use are bruised with a little water or milk to a creamy consistence.

Characters.—Flat, ovate, white, and exalbuminous, consisting of two fleshy, easily separable cotyledons, freshly deprived of the yellowish outer, and brownish inner, integument. Faint odour; taste very slight. Before preparation, the seeds measure from eight to twenty millimetres in length, and from nine to twelve millimetres in breadth.

Dose.

Metric.

80 to 120 grammes.

Imperial.

3 to 4 ounces.

CUPRI SULPHAS

Copper Sulphate

Synonym—Cupric Sulphate

Copper Sulphate, $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$, may be obtained by the interaction of sulphuric acid, copper or copper oxide, and water.

Characters and Tests.—Blue triclinic prisms. Soluble in 3·5 parts of water, very soluble in *glycerin*, almost insoluble in *alcohol* (90 per cent.). The aqueous solution strongly reddens *litmus*. Yields the *reactions* characteristic of copper and of sulphates. Yields no characteristic *reactions* for lead, zinc, or aluminium. *Arsenic limit* 10 parts per million. Contains not more than 0·1 per cent. of iron, calculated as Fe, when tested by the following process :—

Dissolve 5 grammes in 25 millilitres of water, add 2 millilitres of *nitric acid*, heat to boiling, cool, and add *strong solution of ammonia* until the precipitate which first forms is redissolved and the liquid smells distinctly

of ammonia. Filter. Wash the filter paper thoroughly with *water* made alkaline with *solution of ammonia*, re-dissolve in *hydrochloric acid* any precipitate that has been collected, reprecipitate with *solution of ammonia*, collect, wash, dry, ignite, and weigh the residue. It weighs not more than 0.007 gramme.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
16 to 120 milligrams (astringent).	$\frac{1}{4}$ to 2 grains (astringent).
3 to 6 decigrams (emetic).	5 to 10 grains (emetic).

CUSO

Kousso

Kousso consists of the dried panicles of pistillate flowers of *Brayera anthelmintica*, *Kunth*.

Characters.—Usually in more or less cylindrical rolls from three to six decimetres long, composed of reddish panicles of pistillate flowers. Panicles much branched, the branches arising from the axils of large sheathing bracts; more or less covered with hairs and glands. Flowers numerous, small, shortly stalked, mostly unisexual, with two roundish membranous veined bracts at the base of each. Calyx with reddish veins, hairy externally, and consisting of two alternating whorls each of five segments, the inner whorl being curved inwards over the young fruit and shrivelled. No marked odour; taste bitter and acrid.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
8 to 16 grammes.	120 to 240 grains.

DATURÆ FOLIA**Datura Leaves**

Datura Leaves are the dried leaves of *Datura fastuosa*, *Linn.*, var. *alba*, *Nees*, and also of *Datura Metel*, *Linn.*

Characters.—Brownish or yellowish green, attaining twenty centimetres in length and thirteen centimetres in breadth; ovate, acuminate, with sinuate-dentate margins and long petioles; often unequal at the base; bearing scattered glandular and simple hairs. Characteristic odour; taste bitter.

DATURÆ SEMINA**Datura Seeds**

Datura Seeds are the dried seeds of *Datura fastuosa*, *Linn.* var. *alba*, *Nees*.

Characters.—Yellowish-brown, somewhat wedge-shaped, flattened, with rounded, thickened, furrowed, wavy margins; from four to five millimetres broad and about one millimetre thick. Hilum large, extending from about the middle to the acute end of the seed. Surface finely pitted and reticulated. Endosperm narrow and translucent, enclosing a curved embryo. No odour; taste slightly bitter.

DECOCTUM ACACIÆ CORTICIS**Decoction of Acacia Bark**

Acacia Bark, bruised 60 grammes

Distilled Water sufficient to
produce 1000 millilitres

Boil the Acacia Bark with twelve hundred millilitres of

Distilled Water, in a suitable vessel, for ten minutes; strain; if necessary pour sufficient Distilled Water over the contents of the strainer to produce the required volume.

Dose.

Metric.
15 to 60 mils.

Imperial.
 $\frac{1}{2}$ to 2 fluid ounces.

DECOCTUM AGROPYRI**Decoction of Couch Grass**

Synonym—Decoction of Triticum

Couch Grass, cut small	.	.	.	50 grammes
Distilled Water sufficient to				
produce.	.	.	.	1000 millilitres

Boil the Couch Grass with twelve hundred millilitres of Distilled Water, in a suitable vessel, for ten minutes; strain; if necessary pour sufficient Distilled Water over the contents of the strainer to produce the required volume.

Dose.

Metric.
15 to 60 mils.

Imperial.
 $\frac{1}{2}$ to 2 fluid ounces.

DECOCTUM ALOES COMPOSITUM**Compound Decoction of Aloes**

Extract of Aloes	.	.	.	10 grammes
Myrrh	}	of each	.	5 grammes
Potassium Carbonate				
Extract of Liquorice	.	.	.	40 grammes
Compound Tincture of Cardamoms	.			300 millilitres
Distilled Water sufficient to				
produce	.	.	.	1000 millilitres

Reduce the Extract of Aloes and the Myrrh to coarse powder, and boil them and the Potassium Carbonate and the Extract of Liquorice with four hundred millilitres of Distilled Water in a covered vessel for five minutes; cool; add the Tincture of Cardamoms; set aside for two hours; strain through flannel; pass sufficient Distilled Water through the strainer to produce the required volume.

*Dose.**Metric.*

15 to 60 mls.

Imperial. $\frac{1}{2}$ to 2 fluid ounces.**DECOCTUM GOSSYPII RADICIS CORTICIS****Decoction of Cotton Root Bark**

Cotton Root Bark, bruised . . .	200 grammes
Distilled Water sufficient to produce	1000 millilitres

Boil the Cotton Root Bark with two thousand millilitres of the Distilled Water, in a suitable vessel, until the volume is reduced to one thousand millilitres; strain; if necessary pour sufficient Distilled Water over the contents of the strainer to produce the required volume.

*Dose.**Metric.*

15 to 60 mls.

Imperial. $\frac{1}{2}$ to 2 fluid ounces.**DECOCTUM HÆMATOXYLI****Decoction of Logwood**

Logwood, in chips	50 grammes
Cinnamon Bark, bruised	10 grammes
Distilled Water sufficient to produce	1000 millilitres

Boil the Logwood with twelve hundred millilitres of Distilled Water in a suitable vessel for ten minutes, adding the Cinnamon Bark towards the end of the time ; strain ; pour sufficient Distilled Water over the contents of the strainer to produce the required volume.

Dose.

Metric.
15 to 60 mls.

Imperial.
 $\frac{1}{2}$ to 2 fluid ounces.

DECOCTUM ISPAGHULÆ**Decoction of Ispaghula**

Ispaghula, bruised	15 grammes
Distilled Water sufficient to produce	1000 millilitres

Boil the Ispaghula with twelve hundred millilitres of Distilled Water, in a suitable vessel, for ten minutes ; strain ; if necessary pour sufficient Distilled Water over the contents of the strainer to produce the required volume.

Dose.

Metric.
15 to 60 mls.

Imperial.
 $\frac{1}{2}$ to 2 fluid ounces.

DECOCTUM SAPPAN**Decoction of Sappan**

Sappan, in chips	50 grammes
Cinnamon Bark, bruised	10 grammes
Distilled Water sufficient to produce	1000 millilitres

Boil the Sappan with twelve hundred millilitres of Distilled Water, in a suitable vessel, for ten minutes, adding the Cinnamon Bark towards the end of the time ; strain ; if necessary pour sufficient Distilled Water over the contents of the strainer to produce the required volume.

Dose.

Metric.

15 to 60 mils.

Imperial.

 $\frac{1}{2}$ to 2 fluid ounces.

DIAMORPHINÆ HYDROCHLORIDUM

Diamorphine Hydrochloride = *Heroin hydrochloride*

Synonym—Diacetyl-morphine Hydrochloride

Diamorphine Hydrochloride, $C_{21}H_{23}NO_5 \cdot HCl \cdot H_2O$, is the hydrochloride of an alkaloid obtainable by the action of acetic anhydride on morphine.

Characters and Tests.—A white, crystalline powder; taste bitter. Melting point from 231° to 232° . Soluble in 3 parts of *water* and in 11 parts of *alcohol* (90 per cent.). Yields the *reactions* characteristic of chlorides. 0.1 gramme dissolved in 2 millilitres of *alcohol* (90 per cent.), mixed with 1 millilitre of *sulphuric acid* and warmed, develops an odour of acetic ether. A solution of 0.1 gramme in 1 millilitre of *sulphuric acid* heated on a water-bath, cooled and diluted with 6 millilitres of *water*, gives a deep blue colour on the addition of a little 0.5 per cent. aqueous solution of *potassium ferricyanide* to which 1 drop of *T.Sol. of ferric chloride* has been added. Treated with a few drops of *nitric acid* a yellow colour is produced, which changes to greenish-blue on warming, and finally becomes yellow again. 0.02 gramme added to 5 millilitres of a 0.5 per cent. aqueous solution of *potassium ferricyanide*, to which 1 drop of *T.Sol. of ferric chloride* has been added, produces a greenish colour and not a deep blue (absence of morphine).

Dose.

Metric.

2.5 to 3 milligrams.

Imperial.

 $\frac{1}{25}$ to $\frac{1}{8}$ grain.

DIGITALIS FOLIA**Digitalis Leaves**

Digitalis Leaves are the dried leaves of *Digitalis purpurea*, *Linn.*, collected from plants commencing to flower, thoroughly dried at a low temperature, and kept dry in well-filled air-tight containers. When powdered no portion should be rejected.

Characters.—From ten to thirty centimetres or more in length, and sometimes twelve and a half to fifteen centimetres broad, with a winged petiole of varying length down which the lower veins are decurrent; broadly ovate or ovate-lanceolate, subacute, crenate or irregularly crenate-dentate. Upper surface somewhat rugose, dull green and slightly hairy; under surface paler and densely pubescent. Hairs of two kinds, either simple, mostly 3-5 celled and bluntly pointed, or glandular and consisting of a short pedicel bearing a unicellular or bicellular gland. In transverse section, no sclerenchymatous cells or fibres, and no crystals of calcium oxalate. In the powdered leaves, groups of epidermal cells with more or less sinuous walls, numerous fragments of multicellular hairs with thin, granular walls; but no sclerenchymatous cells or fibres, or crystals of calcium oxalate. No marked odour; taste very bitter.

Dose (in powder).

<i>Metric.</i>	<i>Imperial.</i>
3 to 12 centigrams.	$\frac{1}{2}$ to 2 grains.

Divertin, p. 389

EMBELIA**Embelia**

Embelia is the dried fruit of *Embelia Ribes*, *Burm. fl.*, and also of *Embelia robusta*, *Roxb.*

Characters.—Globular, about four millimetres in diameter, varying in colour from dull red to nearly black;

warty or striated longitudinally; superior, minutely beaked and often attached to a 5-partite calyx and slender pedicel. Pericarp brittle, enclosing a single seed surrounded by a delicate membrane. Seed reddish, marked with lighter spots. Endosperm horny and slightly ruminated. Taste slightly astringent and aromatic.

Dose (in powder).

Metric.

4 to 16 grammes.

Imperial.

60 to 240 grains.

EMPLASTRUM BELLADONNÆ

Belladonna Plaster

Liquid Extract of Belladonna	. 50.0 millilitres
Resin Plaster	. 137.5 grammes

Concentrate the Liquid Extract of Belladonna by evaporation at a low temperature until it is reduced in weight to twelve and a half grammes; add the Resin Plaster, previously melted; mix.

This Plaster contains 0.25 per cent. of the alkaloids of Belladonna Root, and is one-half the strength of the Emplastrum Belladonnæ of the British Pharmacopœia, 1898.



EMPLASTRUM CALEFACIENS

Warming Plaster

Cantharidin	. 0.2 gramme
Chloroform	. 20.0 millilitres
Olive Oil	. 40.0 millilitres
Resin Plaster	. 940.0 grammes

Dissolve the Cantharidin in the Chloroform, add the Olive Oil, and mix with the Resin Plaster, previously melted on a water-bath.

This Plaster contains 0.02 per cent. of Cantharidin, and is of approximately the same strength as the corresponding preparation of the British Pharmacopœia, 1898.

See Appendix XII, page , Oleum Olivæ.

EMPLASTRUM CANTHARIDINI**Cantharidin Plaster**

Cantharidin	2 grammes
Chloroform	100 millilitres
Yellow Beeswax	450 grammes
Wool Fat sufficient to produce . .	1000 grammes

Dissolve the Cantharidin in the Chloroform by the aid of heat, add to the other ingredients previously melted on a water-bath, and stir until cold.

This Plaster contains 0·2 per cent. of Cantharidin, and is of approximately the same strength as the Emplastrum Cantharidis of the British Pharmacopœia, 1898.

See Appendix XII, page , Emplastra.

EMPLASTRUM HYDRARGYRI**Mercurial Plaster**

Mercury	328 grammes
Olive Oil	18 grammes
Sublimed Sulphur	2 grammes
Lead Plaster	652 grammes

Heat the Olive Oil with the Sulphur until a reddish-brown liquid is obtained ; with this mixture triturate the Mercury until metallic globules are no longer visible ; add the Lead Plaster, previously melted ; mix.

See Appendix XII, page , Oleum Olivæ.

EMPLASTRUM MENTHOL**Menthol Plaster**

Menthol	150 grammes
Yellow Beeswax	100 grammes
Resin	750 grammes

THE NEW YORK PUBLIC LIBRARY
ASTOR LENOX TILDEN FOUNDATION
500 5th Avenue, New York 17, N.Y.

THE NEW YORK PUBLIC LIBRARY
ASTOR LENOX TILDEN FOUNDATION
500 5th Avenue, New York 17, N.Y.
This book is loaned to you by the
New York Public Library, Astor Lenox
Tilden Foundation, 500 5th Avenue,
New York 17, N.Y. It is to be
returned to the Library on or before
the date indicated on the label
attached to the book.

THE NEW YORK PUBLIC LIBRARY
ASTOR LENOX TILDEN FOUNDATION
500 5th Avenue, New York 17, N.Y.

THE NEW YORK PUBLIC LIBRARY
ASTOR LENOX TILDEN FOUNDATION
500 5th Avenue, New York 17, N.Y.
This book is loaned to you by the
New York Public Library, Astor Lenox
Tilden Foundation, 500 5th Avenue,
New York 17, N.Y. It is to be
returned to the Library on or before
the date indicated on the label
attached to the book.

THE NEW YORK PUBLIC LIBRARY
ASTOR LENOX TILDEN FOUNDATION
500 5th Avenue, New York 17, N.Y.

THE NEW YORK PUBLIC LIBRARY
ASTOR LENOX TILDEN FOUNDATION
500 5th Avenue, New York 17, N.Y.
This book is loaned to you by the
New York Public Library, Astor Lenox
Tilden Foundation, 500 5th Avenue,
New York 17, N.Y. It is to be
returned to the Library on or before
the date indicated on the label
attached to the book.

Melt the Beeswax and Resin together ; when the mixture has cooled to about 70° add the Menthol, and stir until dissolved.

See Appendix XII, page , Emplastra.

EMPLASTRUM PLUMBI

Lead Plaster

Lead Oxide	400 grammes
Olive Oil	800 grammes
Distilled Water	400 millilitres
or a sufficient quantity	

Boil gently together in a steam-bath, stirring constantly until combination has been effected. When cool remove the plaster-like mass produced ; knead it thoroughly with hot water, and allow it to dry.

See Appendix XII, page , Oleum Olivæ.

EMPLASTRUM RESINÆ

Resin Plaster

Synonym—Adhesive Plaster

Resin	100 grammes
Lead Plaster	850 grammes
Hard Soap	50 grammes

Melt each ingredient separately at as low a temperature as possible ; mix.

See Appendix XII, page , Emplastra.

EMPLASTRUM SAPONIS

Soap Plaster

Hard Soap	140 grammes
Lead Plaster	835 grammes
Resin	25 grammes

Melt each ingredient separately at a low temperature ; mix ; evaporate, with constant stirring, to a proper consistence.

See Appendix XII, page , Emplastra.

ERGOTA

Ergot

Synonym—Ergot of Rye

Ergot is the sclerotium of *Claviceps purpurea*, *Tulasne*, originating in the ovary of *Secale cereale*, *Linn.* Ergot should be thoroughly dried and kept entire in air-tight containers ; it should not be used if more than one year old.

Characters and Test.—Subcylindrical or somewhat triangular, tapering towards the ends, generally curved ; from one and a half to four centimetres long ; longitudinally furrowed on each side, but more especially on that which is concave ; often irregularly cracked ; very dark violet-black externally, whitish or pinkish-white within ; fracture short. Odour characteristic and disagreeable, especially when triturated with *solution of sodium hydroxide* ; taste disagreeable.

	<i>Dose.</i>	
<i>Metric.</i>		<i>Imperial.</i>
1 to 4 grammes.		15 to 60 grains.

ETHYL CHLORIDUM

Ethyl Chloride

Ethyl Chloride, C_2H_5Cl , may be obtained by the action of hydrochloric acid on ethylic alcohol or on industrial methylated spirit; in the latter case it will contain a small but variable proportion of methyl chloride, CH_3Cl .

Characters and Tests.—Gaseous at normal temperature and pressure, but as usually supplied it is condensed into a colourless, mobile, inflammable, and very volatile liquid. Odour pleasant and ethereal, not alliaceous; if kept in vessels provided with rubber fittings, it may acquire a slight odour of rubber. Specific gravity at 0° 0.920 to 0.960. *Water* which has been shaken with twice its volume of Ethyl Chloride is neutral to *litmus*, and gives no opalescence or precipitate with *solution of silver nitrate* (absence of sulphur dioxide and of hydrochloric acid). *Sulphuric acid* does not become coloured when shaken with ten times its volume of Ethyl Chloride and, after separation and dilution with an equal volume of *water*, has no unpleasant odour, or odour of ether, and does not become turbid on the addition of *solution of silver nitrate* (absence of ether, empyreumatic matter, and certain other substances). When 0.4 gramme is saponified by heating in a stoppered bottle in a water-bath with 10 millilitres of *N/1 alcoholic solution of potassium hydroxide*, the liquid requires for neutralisation not more than 38.2 millilitres of *N/10 solution of sulphuric acid*, corresponding to a proportion of not less than 99.5 per cent. of esters calculated as ethyl chloride, C_2H_5Cl .

EUONYMI CORTEX

Euonymus Bark

Euonymus Bark is the dried root-bark of *Euonymus atropurpureus*, *Jacq.*

Characters.—In quilled or curved pieces, from two to four millimetres thick. Outer layer a soft, friable, greyish cork, marked with dark patches. Inner surface pale tawny white and smooth. Fracture short, the fractured surface yellowish in colour. Transverse section free from sclerenchymatous cells and fibres, and exhibiting, in the secondary bast, laticiferous cells filled with a granular, elastic substance. Faint but characteristic odour; taste somewhat mucilaginous and afterwards bitter and slightly acrid.

EXTRACTUM AGROPYRI LIQUIDUM

Liquid Extract of Couch Grass

Synonym—Liquid Extract of Triticum

Couch Grass, cut small	. . .	1000 grammes
Distilled Water, boiling	. . .	10000 millilitres
Alcohol (90 per cent.) sufficient to produce		1000 millilitres

Boil the Couch Grass with the Distilled Water for thirty minutes; strain; evaporate, and add sufficient of the Alcohol to produce the required volume.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
4 to 8 mls.	1 to 2 fluid drachms.

See Appendix XII, page . . . , Extracta Liquida.

EXTRACTUM ALOES

Extract of Aloes

Aloes, in small fragments	. . .	1000 grammes
Distilled Water, boiling	. . .	10000 millilitres

Add the Aloes to the Distilled Water and stir well until

they are thoroughly mixed; set the mixture aside for twenty-four hours; decant; strain; evaporate the strained liquid to dryness at a temperature not exceeding 60°.

<i>Dose.</i>	
<i>Metric.</i>	<i>Imperial.</i>
6 to 25 centigrams.	1 to 4 grains.

EXTRACTUM BELÆ LIQUIDUM

Liquid Extract of Bael

Bael Fruit, bruised	1000 grammes
Chloroform Water	15000 millilitres
Alcohol (90 per cent.) sufficient to produce	1000 millilitres

Macerate the bruised Bael Fruit for twelve hours in five thousand millilitres of the Chloroform Water; pour off and reserve the clear liquor; repeat the maceration a second and a third time for one hour in each case, using for each maceration five thousand millilitres of the Chloroform Water; press the marc; strain the mixed liquids through flannel. Evaporate to seven hundred and fifty millilitres, and, when cold, add sufficient of the Alcohol to produce the required volume; filter.

<i>Dose.</i>	
<i>Metric.</i>	<i>Imperial.</i>
4 to 8 mls.	1 to 2 fluid drachms.
See Appendix XII, page	, Extracta Liquida.

EXTRACTUM BELLADONNÆ LIQUIDUM

Liquid Extract of Belladonna

Liquid Extract of Belladonna contains in 100 millilitres 0.75 gramme of the Alkaloids of Belladonna Root.

Belladonna Root, in No. 20

powder	1000 grammes
Alcohol (90 per cent.)	} of each a sufficient quantity
Distilled Water	

Exhaust the Belladonna Root with a mixture of seven volumes of the Alcohol and one volume of Distilled Water by the *repercolation process* until from every three parts of the Root one part of strong percolate has been obtained. Determine the proportion of alkaloids in this strong percolate by the following process:—

Introduce into a separator 10 millilitres of the strong percolate, 50 millilitres of *water*, 2 millilitres of *diluted sulphuric acid*, and 10 millilitres of *chloroform*. Shake vigorously, set aside until complete separation has taken place, draw off the lower layer, and wash it with two successive portions of 10 millilitres of *water* acidified with *diluted sulphuric acid*. Add the washings to the upper layer left in the separator. Make the mixture distinctly alkaline with *solution of ammonia*, and extract the alkaloids by shaking with three successive portions, each of 10 millilitres, of *chloroform*. Mix the chloroformic solutions, shake with 10 millilitres of *water*, allow separation to take place, draw off the lower layer into a beaker, and set aside for the chloroform to evaporate. Heat the residue on a water-bath for thirty minutes, add 10 millilitres of *N/20 solution of sulphuric acid*, warm gently until dissolved, and titrate back with *N/20 solution of sodium hydroxide*, *tincture of cochineal* being used as indicator. Deduct the number of millilitres of alkaline solution required from 10; the remainder, multiplied by 0.01446, gives the weight in grammes of the alkaloids contained in 10 millilitres of the strong percolate. To the remainder of the strong percolate add sufficient of the alcoholic menstruum to produce a Liquid Extract of Belladonna containing 0.75 gramme of the alkaloids of Belladonna Root in 100 millilitres.

Test.—Examined by the foregoing process, Liquid Extract of Belladonna is found to contain in 100 millilitres

0·75 gramme of the alkaloids of Belladonna Root. *Limit of error* 0·05 gramme in excess or defect.

This Liquid Extract contains 0·75 gramme of the alkaloids of Belladonna Root in 100 millilitres; 110 minims contain $\frac{3}{4}$ grain.

EXTRACTUM BELLADONNÆ SICCUM

Dry Extract of Belladonna

Synonyms—Extractum Belladonnæ Alcoholicum :
Extractum Belladonnæ

Dry Extract of Belladonna contains in 100 grammes 1 gramme of the alkaloids of Belladonna Leaves.

Belladonna Leaves, in No. 40	} of each a	
powder		sufficient
Alcohol (70 per cent.)		quantity

Reduce ten grammes of the Belladonna Leaves to No. 60 powder and determine the proportion of alkaloids present by the process described under 'Belladonnæ Folia.' Moisten one thousand grammes of the Belladonna Leaves with two hundred and fifty millilitres of the Alcohol, pack firmly in a percolator and percolate with more of the Alcohol until four thousand millilitres of percolate have been obtained. Determine the proportion of total solids in the percolate by evaporating twenty millilitres, drying the residue at 80° and weighing. Determine also the proportion of alkaloids in the percolate by the process described under 'Tinctura Belladonnæ,' employing forty millilitres of the percolate in the place of one hundred millilitres of the Tincture.

Having thus determined the proportion of total solids and of alkaloids in the percolate, calculate the amount of each the remainder of the percolate will yield, and also the amount of the powdered Belladonna Leaves, the alkaloidal strength of which has also been determined, that must be

added to afford a dry extract containing 1 per cent. of alkaloids. Add to the percolate a somewhat smaller amount of the powdered Leaves than calculation has shown to be necessary, recover the alcohol by distillation, and dry the residue in a shallow, flat tared dish, first on a water-bath, and finally in a current of air at 60° to 80°. Weigh the dish with its contents, calculate the additional amount of powdered Leaves that will be necessary, add this to the product of evaporation, transfer the whole to a dry, slightly warmed mortar and triturate carefully until thoroughly mixed. Pass the powdered Extract through a No. 20 sieve, transfer to a bottle which can be securely closed, and preserve in a cool dry place.

Slightly moisten 5 grammes of the Extract with a mixture of 1 volume of *acetic acid* and 9 volumes of *alcohol* (70 per cent.), pack in a small percolator and percolate with the same menstruum, if necessary "under increased air-pressure, until 50 millilitres of percolate have been collected. Then proceed as described under '*Tinctura Belladonnæ*,' using 50 millilitres of percolate in the place of 100 millilitres of the Tincture.

Test.—Examined by the foregoing process, Dry Extract of Belladonna is found to contain in 100 grammes 1 gramme of the Alkaloids of Belladonna Leaves. *Limit of error* 0.05 gramme in excess or defect.

Dose.

Metric.
16 to 60 milligrams.

Imperial.
 $\frac{1}{4}$ to 1 grain.

This Dry Extract contains 1 per cent. of the alkaloids of Belladonna Leaves.

EXTRACTUM CANNABIS INDICÆ

Extract of Indian Hemp

Exhaust Indian Hemp, in coarse powder, with Alcohol (90 per cent.) by the *percolation process*; recover the

alcohol by distillation, and evaporate the residue to the consistence of a soft extract.

*Dose.**Metric.*

16 to 60 milligrams.

Imperial. $\frac{1}{4}$ to 1 grain.**EXTRACTUM CASCARÆ SAGRADÆ****Extract of Cascara Sagrada**

Exhaust Cascara Sagrada, in No 20 powder, with Distilled Water by the *percolation process*; evaporate the percolate to dryness on a water-bath.

*Dose.**Metric.*

12 to 50 centigrams.

Imperial.

2 to 8 grains.

**EXTRACTUM CASCARÆ SAGRADÆ
LIQUIDUM****Liquid Extract of Cascara Sagrada**

Cascara Sagrada, in No. 20

powder 1000 grammes

Alcohol (90 per cent.) 250 millilitres

Distilled Water sufficient to
produce. 1000 millilitres

Exhaust the Cascara Sagrada with the Distilled Water by the *percolation process*; evaporate the percolate to six hundred millilitres; add the Alcohol previously mixed with one hundred and fifty millilitres of the Distilled Water, or with sufficient to produce the required volume.

*Dose.**Metric.*

2 to 4 mls.

Imperial. $\frac{1}{2}$ to 1 fluid drachm.

See Appendix XII, page

, Extracta Liquida

EXTRACTUM CINCHONÆ LIQUIDUM

Liquid Extract of Cinchona

Liquid Extract of Cinchona contains in 100 millilitres 5 grammes of the alkaloids of Red Cinchona Bark.

Red Cinchona Bark, in No. 60

powder		1000 grammes
Hydrochloric Acid		31 millilitres
Glycerin		125 millilitres
Alcohol (90 per cent.)	} of each a sufficient quantity	
Distilled Water		

Mix the Red Cinchona Bark with five thousand millilitres of the Distilled Water, to which the Hydrochloric Acid and Glycerin have been added; set aside in a covered vessel for forty-eight hours, stirring frequently; transfer to a percolator; when the liquid ceases to pass continue the percolation with Distilled Water until the percolate ceases to give a precipitate with excess of *solution of sodium hydroxide*. Evaporate the percolate in a porcelain or enamelled iron vessel at a temperature not exceeding 85°, until it is reduced to one thousand millilitres.

Determine the proportion of alkaloids in the liquid product by the following process:—

Transfer 5 millilitres to a stoppered glass separator; add 15 millilitres of *benzolated amylic alcohol* and 10 millilitres of *N/1 alcoholic solution of potassium hydroxide*; shake well, set aside in a warm place for a few minutes, shaking occasionally, and then allow the liquids to separate; pour off the clear upper layer into a second separator and repeat the shaking with two further portions of 15 and 10 millilitres of *benzolated amylic alcohol*. Shake the mixed alcoholic liquids with two portions each of 5 millilitres of *water*, and reject the aqueous liquid; then shake vigorously with a warm mixture of 1 volume of *diluted hydrochloric acid* and 5 volumes of *water*, using three successive portions of 30, 30 and 15 millilitres and drawing off the acid liquids into a separator. To this acid liquid

add 15 millilitres of *chloroform* and distinct excess of *solution of ammonia*, shake vigorously, allow the liquids to separate and draw off the chloroformic layer into a weighed dish; repeat the shaking and separating with further portions of 10 millilitres of *chloroform* until the aqueous liquid, after acidification with *diluted sulphuric acid*, gives no further precipitate with *solution of potassio-mercuric iodide*. Add the chloroformic solutions to that in the dish, allow the chloroform to evaporate slowly; dry the residue in the dish at a temperature of about 110° and weigh. The weight of the residue is that of the total alkaloids in 5 millilitres of the liquid product.

Having thus ascertained the alkaloidal strength of the liquid product, bring every volume of it containing 5 grammes of total alkaloids to eighty-five millilitres, either by evaporation, or by dilution with Distilled Water, add twelve and a half millilitres of the Alcohol, and finally sufficient Distilled Water to produce one hundred millilitres.

Test.—Examined by the foregoing process, Liquid Extract of Cinchona is found to contain in 100 millilitres 5 grammes of the alkaloids of Red Cinchona Bark. *Limit of error* 0.2 gramme in excess or defect.

Dose.

Metric.

3 to 10 decimils.

Imperial.

5 to 15 minims.

This Liquid Extract contains 5 grammes of the alkaloids of Red Cinchona Bark in 100 millilitres; 110 minims contain 5 grains.

See Appendix XII, page , Extracta Liquida.

EXTRACTUM COLCHICI

Extract of Colchicum

Crush fresh Colchicum Corms, deprived of their coats; press out the juice; allow the feculence to subside; decant; heat the clear liquid to 100° ; strain through flannel, and

evaporate at a temperature not exceeding 70° to the consistence of a soft extract.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
16 to 60 milligrams.	$\frac{1}{4}$ to 1 grain.

EXTRACTUM COLOCYNTHIDIS COMPOSITUM

Compound Extract of Colocynth

Colocynth Pulp	150 grammes
Extract of Aloes	300 grammes
Scammony Resin	100 grammes
Curd Soap, in powder	75 grammes
Cardamom Seeds, in the finest powder	25 grammes
Alcohol (60 per cent.)	4000 millilitres

Macerate the Colocynth Pulp in the Alcohol for four days; press out the tincture; remove the alcohol by distillation; evaporate to dryness; add the Extract of Aloes, Scammony Resin, and powdered Cardamom Seeds; powder; mix the powder with the Curd Soap.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
12 to 50 centigrams.	2 to 8 grains.

EXTRACTUM ERGOTÆ

Extract of Ergot

Ergot, crushed	1000 grammes
Distilled Water	7500 millilitres
Alcohol (90 per cent.)	650 millilitres

Macerate the Ergot with five thousand millilitres of the

Distilled Water for twelve hours; strain; repeat the maceration with the remainder of the Distilled Water; strain; press; evaporate the mixed liquids to five hundred millilitres; add the Alcohol; set aside for three days, stirring occasionally; filter; evaporate the filtrate to a soft extract.

Dose.

Metric.

12 to 50 centigrams.

Imperial.

2 to 8 grains.

EXTRACTUM ERGOTÆ LIQUIDUM

Liquid Extract of Ergot

Ergot, crushed	1000 grammes
Distilled Water	7500 millilitres
Alcohol (90 per cent.)	375 millilitres

Macerate the crushed Ergot with five thousand millilitres of the Distilled Water for twelve hours; strain; repeat the maceration with the remainder of the Distilled Water; press; strain; evaporate the mixed liquids to seven hundred millilitres; when cold, add the Alcohol; set aside for an hour; filter. The product measures about one thousand millilitres.

Dose.

Metric.

6 to 18 decimils.

Imperial.

10 to 30 minims.

EXTRACTUM EUONYMI

Extract of Euonymus

Exhaust Euonymus Bark in No. 20 powder with Alcohol (45 per cent.) by the *percolation process*. Evaporate the percolate and thoroughly dry the residue. Powder the product as far as possible and mix it with one-fourth of its weight of Calcium Phosphate, continuing the drying and

powdering until a sufficiently dry preparation is obtained ; transfer this to a well-closed bottle.

	<i>Dose.</i>	
<i>Metric.</i>		<i>Imperial.</i>
6 to 12 centigrams.		1 to 2 grains.

EXTRACTUM FILICIS LIQUIDUM

Liquid Extract of Male Fern

Male Fern, in No. 20 powder . . . 1000 grammes
Ether a sufficient quantity

Exhaust the Male Fern by percolation with the Ether ; from the clear percolate recover the ether by distillation and finally evaporate on a water-bath until an oily extract remains.

Tests.—Specific gravity not less than 1.000. *Refractive index* at 40° not less than 1.490. Contains not less than 20 per cent. of filicin as determined by the following process :—

Dissolve 5 grammes of the Liquid Extract in 40 millilitres of *ether*, transfer to a separator, add 100 grammes of *solution of barium hydroxide* and shake vigorously and continuously for five minutes. Allow the liquids to separate and filter off 86 grammes of the aqueous liquid. Acidify this with *hydrochloric acid* and extract with three successive portions of 30, 20, and 15 millilitres of *ether*. Filter the mixed ethereal solutions, wash the filter paper with *ether*, evaporate, dry the residue at 100° and weigh. It weighs not less than 0.8 gramme, equivalent to 20 per cent. of filicin in the Liquid Extract.

	<i>Dose.</i>	
<i>Metric.</i>		<i>Imperial.</i>
3 to 6 mils.		45 to 90 minims.

This Liquid Extract contains not less than 20 per cent. of filicin.

EXTRACTUM GENTIANÆ**Extract of Gentian**

Infuse Gentian Root in ten times its weight of Distilled Water for two hours; boil for fifteen minutes; pour off; press; strain; evaporate the liquid to the consistence of a soft extract.

Dose.

Metric.
12 to 50 decigrams.

Imperial.
2 to 8 grains.

EXTRACTUM GLYCYRRHIZÆ**Extract of Liquorice**

Liquorice Root, in No. 20

powder	1000 grammes
Chloroform Water	5000 millilitres

Mix the Liquorice Root with one-half of the Chloroform Water; set aside for twenty-four hours; strain; press; to the pressed marc add the remainder of the Chloroform Water and set aside for six hours; strain; press; mix the strained liquids; heat to 100°; strain through flannel; evaporate to the consistence of a soft extract.

EXTRACTUM GLYCYRRHIZÆ LIQUIDUM**Liquid Extract of Liquorice**

Liquorice Root, in No. 20

powder	1000 grammes
Chloroform Water	5000 millilitres
Alcohol (90 per cent.)	a sufficient quantity

Mix the Liquorice Root with half of the Chloroform Water; set aside for twenty-four hours; strain; press; to the pressed marc add the remainder of the Chloroform Water, and set aside for six hours; strain; press; mix the strained liquids; heat to 100°; strain through flannel; evaporate until the liquid has acquired, when cold, a specific gravity of 1.200; add to this one-fourth of its volume of the Alcohol; let the mixture stand for twelve hours; filter.

*Dose.**Metric.*

2 to 4 mls.

Imperial. $\frac{1}{2}$ to 1 fluid drachm.

See Appendix XII, page

, Extracta Liquida.

EXTRACTUM GOSSYPH RADICIS CORTICIS LIQUIDUM

Liquid Extract of Cotton Root Bark

Cotton Root Bark, in No. 30

powder 1000 grammes

Glycerin 250 millilitres

Alcohol (90 per cent.) sufficient

to produce 1000 millilitres

Mix the Glycerin with seven hundred and fifty millilitres of the Alcohol; moisten the Cotton Root Bark with this mixture and continue the *percolation process*, using as menstruum first the remainder of the mixture of Glycerin and Alcohol, and afterwards sufficient of the Alcohol to produce the required volume.

*Dose.**Metric.*

2 to 4 mls.

Imperial. $\frac{1}{2}$ to 1 fluid drachm.

EXTRACTUM GRINDELIAE LIQUIDUM**Liquid Extract of Grindelia**

Grindelia, in No. 40 powder . . .	1000 grammes
Sodium Bicarbonate	100 grammes
Distilled Water	500 millilitres
Alcohol (90 per cent.) sufficient to produce	1000 millilitres

Exhaust the Grindelia by percolation with the Alcohol. Remove the alcohol from the percolate by distillation and dissolve the residue in the Distilled Water to which the Sodium Bicarbonate has previously been added; after effervescence has ceased, add sufficient Distilled Water to produce seven hundred and fifty millilitres, and then sufficient of the Alcohol to produce the required volume.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
6 to 12 decimils.	10 to 20 minims.
See Appendix XII, page	, Extracta Liquida.

EXTRACTUM HAMAMELIDIS LIQUIDUM**Liquid Extract of Hamamelis**

Hamamelis Leaves, in No. 40 powder	1000 grammes
Alcohol (45 per cent.) sufficient to produce	1000 millilitres

Exhaust the Hamamelis Leaves by percolation with the Alcohol. Reserve the first eight hundred and fifty millilitres of the percolate; remove the alcohol from the remainder by distillation; evaporate the residue to a soft extract; dissolve this in the reserved portion; add sufficient of the Alcohol to produce the required volume.

	<i>Dose.</i>
<i>Metric.</i>	<i>Imperial.</i>
3 to 10 decimils.	5 to 15 minims.

EXTRACTUM HYDRASTIS LIQUIDUM

Liquid Extract of Hydrastis

Liquid Extract of Hydrastis contains in 100 millilitres 2 grammes of hydrastine.

Hydrastis Rhizome, in No. 60

powder	1000 grammes
Alcohol (60 per cent.)	a sufficient quantity

Exhaust the Hydrastis Rhizome with the Alcohol by the *percolation process*; reserve the first eight hundred and fifty millilitres of the percolate; remove the alcohol from the remainder by distillation; evaporate to a soft extract and dissolve in the reserved portion. Determine the proportion of hydrastine in the liquid extract thus obtained by the following process:—

Transfer 10 millilitres of the liquid extract to a 100 millilitre graduated flask, add 20 millilitres of *solution of potassium iodide* diluted with 60 millilitres of *water*, and then sufficient *water* to produce 100 millilitres. Shake the mixture for several minutes and filter. Transfer 50 millilitres of the filtrate to a separator, render alkaline with *solution of ammonia*, add 30 millilitres of *ether* and shake at intervals during several minutes. Allow the liquids to separate, draw off the aqueous liquid into a beaker and the ethereal solution into a tared beaker. Return the aqueous solution to the separator and repeat the operation with two successive portions of 20 millilitres of *ether* for one minute. Draw off and reject the aqueous layer; transfer the ethereal solution to the tared beaker and evaporate at a gentle heat; dry the residue on a water-bath and weigh. The weight is that of the hydrastine in 5 millilitres of the liquid extract. To the remainder

of the liquid extract add sufficient of the menstruum to produce a Liquid Extract of Hydrastis containing 2 grammes of hydrastine in 100 millilitres.

Test.—Examined by the foregoing process Liquid Extract of Hydrastis is found to contain in 100 millilitres 2 grammes of hydrastine. *Limit of error* 0·1 gramme in excess or defect.

Dose.

Metric.
3 to 10 decimils.

Imperial.
5 to 15 minims.

This Liquid Extract contains 2 grammes of hydrastine in 100 millilitres; 110 minims contain 2 grains.

EXTRACTUM HYOSCYAMI SICCUM

Dry Extract of Hyoscyamus

Synonyms—Extractum Hyoscyami: Extract of Henbane

Dry Extract of Hyoscyamus contains in 100 grammes 0·3 gramme of the alkaloids of Hyoscyamus Leaves.

Hyoscyamus Leaves, in No. 40 powder	} of each a suffi-
Alcohol (90 per cent.)	

Reduce ten grammes of the Hyoscyamus Leaves to No. 60 powder, and determine the proportion of alkaloids present by the process described under 'Belladonnæ Folia.' Moisten one thousand grammes of the Hyoscyamus Leaves with two hundred and fifty millilitres of the Alcohol, pack firmly in a percolator, and percolate with more of the Alcohol until four thousand millilitres of percolate have been obtained. Determine the proportion of total solids in the percolate by evaporating twenty millilitres, drying the residue at 80° and weighing. Determine

also the proportion of alkaloids in the percolate by the process described under 'Tinctura Belladonnæ.'

Having thus determined the proportion of total solids and of alkaloids in the percolate, proceed as directed under 'Extractum Belladonnæ Siccum' to prepare a dry Extract of Hyoscyamus containing 0·3 per cent. of alkaloids.

Test.—Examined by the process described under 'Extractum Belladonnæ Siccum,' Dry Extract of Hyoscyamus is found to contain in 100 grammes 0·3 gramme of the alkaloids of Hyoscyamus Leaves. *Limit of error* 0·015 gramme in excess or defect.

	<i>Dose.</i>	
<i>Metric.</i>		<i>Imperial.</i>
12 to 50 centigrams.		2 to 8 grains.

This Dry Extract may be used when the Extractum Hyoscyami of the International Agreement is required. It contains 0·3 per cent. of the alkaloids of Hyoscyamus Leaves.

EXTRACTUM IPECACUANHÆ LIQUIDUM

Liquid Extract of Ipecacuanha

Liquid Extract of Ipecacuanha contains in 100 millilitres 2 grammes of the alkaloids of Ipecacuanha Root.

Ipecacuanha Root, in No. 120

powder	1000 grammes
Alcohol (90 per cent.)	a sufficient quantity

Pack the Ipecacuanha Root uniformly in a conical percolator, add two hundred millilitres of the Alcohol, and set aside for twelve hours; then percolate with successive portions of two hundred millilitres of the Alcohol added at intervals of twelve hours until the liquid begins to drop from the orifice of the percolator. Continue the percola-

tion with more of the Alcohol until seven hundred and fifty millilitres of percolate have been collected. Reserve this portion. Then percolate until exhaustion is complete; recover the alcohol from this percolate by distillation, and dissolve the residual extract in the reserved portion. Determine the proportion of alkaloids in the liquid extract thus obtained by the following process:—

Introduce 5 millilitres of the liquid extract into a separator and add 4 millilitres of *water*, 1 millilitre of *diluted sulphuric acid*, and 10 millilitres of *ether*. Shake, and separate the ethereal solution. Repeat the shaking with 5 millilitres of *ether* and again separate. Wash the mixed ethereal solutions in a second separator with two successive portions, each of 5 millilitres, of *water*, and add the washings to the contents of the first separator. Shake this aqueous liquid with 10 millilitres of *chloroform* and excess of *solution of ammonia*. Separate the chloroformic solution and filter it through a small filter-paper into a tared dish. Repeat the shaking with *chloroform*, separation and filtration twice, finally washing the filter-paper with a little *chloroform*. Evaporate the mixed chloroformic solutions to about 2 millilitres, add 5 millilitres of *ether*, evaporate, dry at a temperature not exceeding 80° and weigh the residual alkaloids.

To the remainder of the liquid extract add sufficient of the Alcohol to produce a Liquid Extract of *Ipecacuanha* containing 2 grammes of the alkaloids of *Ipecacuanha* Root in 100 millilitres.

Test.—Examined by the foregoing process Liquid Extract of *Ipecacuanha* is found to contain in 100 millilitres 2 grammes of the alkaloids of *Ipecacuanha* Root. *Limit of error* 0·1 gramme in excess or defect.

Dose.

Metric.

3 to 12 centimils.

Imperial.

$\frac{1}{2}$ to 2 minims.

This Liquid Extract contains 2 grammes of the alkaloids of *Ipecacuanha* Root in 100 millilitres; 110 minims contain 2 grains.

EXTRACTUM KAVÆ LIQUIDUM**Liquid Extract of Kava**

Kava Rhizome, in No. 20

powder	1000 grammes
Alcohol (90 per cent.)	a sufficient quantity
Alcohol (45 per cent.)	a sufficient quantity

Mix the powdered Kava Rhizome with two thousand millilitres of the Alcohol (90 per cent.) ; set aside in a closed vessel for forty-eight hours ; transfer to a percolator and percolate slowly, reserving the first seven hundred and fifty millilitres of the percolate. Continue the percolation, adding the Alcohol (45 per cent.) until the powder is exhausted ; then remove most of the alcohol from this percolate by distillation ; evaporate the residue at a temperature below 80° to the consistence of a soft extract, and dissolve this in the reserved percolate ; add sufficient of the Alcohol (90 per cent.) to produce one thousand millilitres of the Liquid Extract.

	<i>Dose.</i>	
<i>Metric.</i>		<i>Imperial.</i>
2 to 4 mls.		$\frac{1}{2}$ to 1 fluid drachm.

EXTRACTUM KRAMERIÆ**Extract of Krameria***Synonym*—Extract of Rhatany

Exhaust Krameria Root, in No. 10 powder, with Distilled Water by the *percolation process* ; evaporate the percolate to dryness.

	<i>Dose.</i>	
<i>Metric.</i>		<i>Imperial.</i>
3 to 10 decigrams.		5 to 15 grains.

ASTROLOGICAL SOCIETY OF LONDON

Volume 10, Part 1

THE JOURNAL OF THE
ASTROLOGICAL SOCIETY OF LONDON
Volume 10, Part 1
1911
The Journal of the Astrological Society of London is a quarterly publication devoted to the study and practice of astrology. It contains articles on the history, theory, and practice of astrology, as well as reports on the activities of the Society. The Journal is published by the Society and is available to its members at a special price. It is also available to non-members at a higher price. The Journal is published in English and is available in both print and electronic formats. The print format is available in both hardcover and paperback. The electronic format is available in both PDF and HTML formats. The Journal is published by the Society and is available to its members at a special price. It is also available to non-members at a higher price. The Journal is published in English and is available in both print and electronic formats. The print format is available in both hardcover and paperback. The electronic format is available in both PDF and HTML formats.

THE JOURNAL OF THE

ASTROLOGICAL SOCIETY OF LONDON

THE JOURNAL OF THE
ASTROLOGICAL SOCIETY OF LONDON
Volume 10, Part 1
1911
The Journal of the Astrological Society of London is a quarterly publication devoted to the study and practice of astrology. It contains articles on the history, theory, and practice of astrology, as well as reports on the activities of the Society. The Journal is published by the Society and is available to its members at a special price. It is also available to non-members at a higher price. The Journal is published in English and is available in both print and electronic formats. The print format is available in both hardcover and paperback. The electronic format is available in both PDF and HTML formats.

EXTRACTUM NUCIS VOMICÆ LIQUIDUM

Liquid Extract of Nux Vomica

Liquid Extract of Nux Vomica contains in 100 millilitres 1·5 grammes of strychnine.

Nux Vomica, in No. 20 powder . 1000 grammes
Alcohol (70 per cent.) . a sufficient quantity

Exhaust the Nux Vomica with the Alcohol by the *repercolation process* until five hundred millilitres of percolate have been obtained. Place this percolate in a closed vessel with fifteen grammes of Hard Paraffin and heat to 60° for a few minutes, shaking vigorously. Allow the contents of the vessel to cool and the layer of paraffin which will have separated to solidify. Pour off the percolate thus freed from fat and filter. Determine the proportion of Strychnine in it by the following process:—

Evaporate 10 millilitres on a water-bath to a syrupy extract; dissolve the residue in 10 millilitres of warm *water* and transfer to a separator, washing the dish with a further 10 millilitres of *water*. Add 10 millilitres of *chloroform* and a solution of 5 grammes of *sodium carbonate* in 25 millilitres of *water*. Shake vigorously; set aside and separate the chloroformic solution. Repeat the extraction with *chloroform* twice. Mix the three chloroformic solutions, and extract the alkaloids by shaking with three successive portions, each of 10 millilitres, of *N/1 solution of sulphuric acid*, transferring the acid solutions to a second separator. Make the acid solutions alkaline with *solution of ammonia*, and again extract the alkaloids by shaking successively with 10, 5, and 5 millilitres of *chloroform*, drawing off the chloroformic solutions into a small flask. Remove the chloroform by distillation, dissolve the residue in 15 millilitres of *water* containing 3 per cent. of *sulphuric acid*, heat the solution to 50°, add 3 millilitres of a mixture of equal volumes of *nitric acid* and *water*, and set aside for ten minutes. Transfer the solution to a separator, rinsing the flask with a little *water*, make alkaline with *solution of sodium hydroxide*, and extract

the alkaloid by shaking successively with 10, 5, and 5 millilitres of *chloroform*. Wash the mixed chloroformic solutions in a separator with 5 millilitres of *water*, transfer to a tared dish and allow the chloroform to evaporate, adding towards the end 5 millilitres of *alcohol* (90 per cent.). Evaporate to dryness, dry the residue at 100° and weigh. The weight is the weight in grammes of the Strychnine contained in 10 millilitres of percolate.

To the remainder of the percolate add sufficient Alcohol (70 per cent.) to produce a Liquid Extract of Nux Vomica containing 1·5 grammes of strychnine in 100 millilitres.

Test.—Examined by the foregoing process Liquid Extract of Nux Vomica is found to contain in 100 millilitres 1·5 grammes of strychnine. *Limit of error* 0·05 gramme in excess or defect.

Dose.

Metric.
6 to 18 centimils.

Imperial.
1 to 3 minims.

This Liquid Extract contains 1·5 grammes of strychnine in 100 millilitres; 110 minims contain 1·5 grains.

EXTRACTUM NUCIS VOMICÆ SICCUM

Dry Extract of Nux Vomica

Dry Extract of Nux Vomica contains in 100 grammes 5 grammes of strychnine.

Liquid Extract of Nux Vomica	} of each a sufficient
Calcium Phosphate	

Evaporate ten millilitres of the Liquid Extract in a flat-bottomed dish and dry at 100°. The weight of the dry extract thus obtained deducted from three grammes gives the weight of Calcium Phosphate to be added to each ten

millilitres of the Liquid Extract. Take one hundred parts of the Liquid Extract; recover the alcohol by distillation; add sufficient of the Calcium Phosphate, as indicated by the above determination, to produce thirty parts of extract; dry at 100° and reduce to a fine powder.

Test.—3 grammes of Dry Extract of Nux Vomica, when exhausted with *alcohol* (70 per cent.), afford a liquid which when tested by the process described under 'Extractum Nucis Vomicae Liquidum' yields 0·15 gramme of strychnine, representing in 100 grammes of the Dry Extract 5 grammes of strychnine. *Limit of error* 0·2 gramme in excess or defect.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
16 to 60 milligrams.	$\frac{1}{4}$ to 1 grain.

This Dry Extract contains 5 per cent. of strychnine.

EXTRACTUM OPII LIQUIDUM.

Liquid Extract of Opium

Liquid Extract of Opium contains in 100 millilitres 0·75 gramme of morphine, calculated as anhydrous.

Extract of Opium . . .	37·5 grammes
Alcohol (90 per cent.) . . .	200·0 millilitres
Distilled Water sufficient to produce	1000·0 millilitres

Mix the Extract with seven hundred millilitres of the Distilled Water; set aside in a cool place for twenty-four hours, stirring frequently; add the Alcohol; set aside again for twenty-four hours; filter; wash the filter with sufficient Distilled Water to produce the required volume.

Test.—Examined by the process described under ‘Tinctura Opii,’ Liquid Extract of Opium is found to contain in 100 millilitres 0·75 gramme of morphine, calculated as anhydrous. *Limit of error* 0·05 gramme in excess or defect.

*Dose.**Metric.*

3 to 18 decimils.

Imperial.

5 to 30 minims.

This Liquid Extract contains 0·75 gramme of morphine in 100 millilitres; 110 minims contain $\frac{3}{4}$ grain.

See Appendix XII, page , Extracta Liquida.

EXTRACTUM OPII SICCUM**Dry Extract of Opium**

Dry Extract of Opium contains in 100 grammes 20 grammes of morphine, calculated as anhydrous.

Exhaust sliced Opium with about five times its weight of Distilled Water; strain the liquid through flannel; cool and ascertain its volume. Determine the percentage of morphine present in forty millilitres of this liquid by the process described under ‘Tinctura Opii,’ and determine also the percentage of total solids dried at 100°. Add to the remainder of the liquid sufficient Calcium Phosphate to yield an extract which, when dried at 100°, contains 20 per cent. of morphine; evaporate to dryness, powder, and finally dry at 100°.

Test.—Examined by the process described under ‘Opium,’ Dry Extract of Opium is found to contain in 100 grammes 20 grammes of morphine, calculated as anhydrous. *Limit of error* 1 gramme in excess or defect.

*Dose.**Metric.*

16 to 60 milligrams.

Imperial. $\frac{1}{4}$ to 1 grain.

This Dry Extract contains 20 per cent. of morphine.

EXTRACTUM PICRORHIZÆ LIQUIDUM**Liquid Extract of Picrorhiza**

Picrorhiza, in No. 60 powder . . . 1000 grammes
 Alcohol (60 per cent.) sufficient
 to produce 1000 millilitres

Exhaust the Picrorhiza with the Alcohol by the *percolation process*. Reserve the first eight hundred and fifty millilitres of the percolate; remove the alcohol from the remainder by distillation; evaporate the residue to a soft extract; dissolve this in the reserved portion; add sufficient of the Alcohol to produce the required volume.

Dose.

Metric.
 1 to 4 mls.

Imperial.
 15 to 60 minims.

EXTRACTUM RHEI**Extract of Rhubarb**

Exhaust Rhubarb, in No. 20 powder, with Alcohol (60 per cent.) by the *percolation process*. Remove most of the alcohol from the percolate by distillation, and evaporate the residual liquid to dryness.

Dose.

Metric.
 12 to 50 centigrams.

Imperial.
 2 to 8 grains.

EXTRACTUM STROPHANTHI**Extract of Strophanthus**

Strophanthus Seeds, reduced to No.

30 powder, and dried at 45° . . . 25 grammes

Ether	} of each a sufficient quantity
Alcohol (90 per cent.)	
Milk Sugar, in fine powder	

Pack the *Strophanthus* Seeds in a percolator ; moisten with the Ether, and macerate for twenty-four hours ; then allow percolation to proceed, continuing the addition of the Ether until the liquid passes through colourless. Remove the marc from the percolator, and dry it, gradually heating it to 50°. Again reduce it to powder, repack in the percolator, and moisten with the Alcohol. Macerate for forty-eight hours, then pour on successive quantities of the Alcohol, percolating slowly, until two hundred and fifty millilitres of liquid are obtained. Evaporate most of the alcohol ; transfer the residual liquid to a counterpoised basin ; concentrate until the liquid begins to thicken ; then add sufficient of the Milk Sugar to produce fifty grammes of Extract, in powder.

*Dose.**Metric.*

16 to 60 milligrams.

Imperial. $\frac{1}{4}$ to 1 grain.**EXTRACTUM TARAXACI****Extract of Taraxacum**

Crush fresh *Taraxacum* Root ; press out the juice ; allow the feculence to subside ; decant ; heat the liquid to 100°, and maintain the temperature for ten minutes ; strain ; evaporate to the consistence of a soft extract.

*Dose.**Metric.*

3 to 10 decigrams.

Imperial.

5 to 15 grains.

EXTRACTUM VIBURNI LIQUIDUM**Liquid Extract of Black Haw**

Black Haw, in No. 60 powder	1000 grammes
Alcohol (70 per cent.) sufficient to produce	1000 millilitres

Exhaust the Black Haw with the Alcohol by the *percolation process*. Reserve the first eight hundred and fifty millilitres of the percolate; remove the alcohol from the remainder by distillation; evaporate the residue to a soft extract; dissolve this in the reserved portion; add sufficient of the Alcohol to produce the required volume.

Dose.

Metric.

4 to 8 mils.

Imperial.

1 to 2 fluid drachms.

FEL BOVINUM PURIFICATUM

Purified Ox Bile

Evaporate five hundred millilitres of fresh ox bile to one-fourth of its volume; shake this liquid with twice its volume of Alcohol (90 per cent.); set the mixture aside until the solid matter has subsided; decant the clear solution, and filter the remainder, washing the filter and contents with a little more Alcohol (90 per cent.). Distil off most of the alcohol from the mixed liquids, and evaporate the residue in a porcelain dish, on a water-bath, to the consistence of a firm extract.

Characters and Tests.—A yellowish-green hygroscopic substance, having a taste partly sweet and partly bitter, soluble in *water* and in *alcohol* (90 per cent.). 1 millilitre of an aqueous solution (1 in 100) in which 0.1 gramme of *refined sugar* has been dissolved, gradually acquires a deep violet colour when mixed with 10 millilitres of *syrupy phosphoric acid* and heated in a water-bath. Its aqueous solution on the addition of half its volume of *alcohol* (90 per cent.) gives no precipitate (absence of unpurified ox bile). ✓

Dose.

Metric.

3 to 10 decigrams.

Imperial.

5 to 15 grains.

FERRI CARBONAS SACCHARATUS

Saccharated Iron Carbonate

Saccharated Iron Carbonate is ferrous carbonate, more or less oxidised, mixed with glucose. Contains not less than 50 per cent. of ferrous salts calculated as ferrous carbonate, FeCO_3 .

Ferrous Sulphate	97.5 grammes
Glucose	30.0 grammes
Sodium Carbonate	105.0 grammes
Distilled Water, boiling,	a sufficient quantity

Dissolve fifteen grammes of the Glucose in three hundred millilitres of the Distilled Water, and dissolve the Ferrous Sulphate in the solution. Dissolve the Sodium Carbonate in one hundred and fifty millilitres of the Distilled Water, and to this add the solution of the Ferrous Sulphate, stirring constantly. Then add four hundred millilitres of the Distilled Water, mix thoroughly, and allow the precipitate to subside. Decant the supernatant liquid, and wash the precipitate with two successive quantities, each of four hundred millilitres, of the Distilled Water. Mix the washed precipitate with the remainder of the Glucose, and dry at a temperature not exceeding 100° . Powder the product, and preserve it in a stoppered bottle.

Characters and Tests.—A greenish-brown powder, with a feebly chalybeate taste. Soluble with effervescence in *hydrochloric acid* diluted with half its volume of *water*. 1 gramme, dissolved in excess of warm *concentrated phosphoric acid* and diluted with *water*, does not cease to yield a blue precipitate with *solution of potassium ferricyanide* until 43.1 millilitres of *N/10 solution of potassium bichromate* have been added. *Arsenic limit* 5 parts per million.

Dose.

Metric.

6 to 20 decigrams.

Imperial.

10 to 30 grains.

FERRI ET AMMONII CITRAS

Iron and Ammonium Citrate

Solution of Ferric Sulphate	. . .	200 millilitres
Solution of Ammonia	. . .	460 millilitres,
		or a sufficient quantity
Citric Acid		80 grammes
Distilled Water		a sufficient quantity

Prepare ferric hydroxide as follows :—Mix three hundred and twenty millilitres of the Solution of Ammonia with eight hundred millilitres of Distilled Water ; gradually add to this the Solution of Ferric Sulphate, previously diluted with eight hundred millilitres of Distilled Water ; stir constantly and briskly, taking care that ammonia is, finally, in slight excess as indicated by the odour ; set aside the mixture for two hours, stirring it occasionally ; pour it on a calico filter ; when the liquid has drained away, wash the precipitated ferric hydroxide with Distilled Water until free from sulphates.

Dissolve the Citric Acid in its own weight of Distilled Water ; warm the mixture on a water-bath ; add the ferric hydroxide, previously well drained ; stir them together until nearly the whole of the hydroxide has dissolved, or until the Citric Acid is saturated with ferric hydroxide (prepared, if necessary, from more of the Solution of Ferric Sulphate) ; let the solution cool ; add one hundred and ten millilitres of Solution of Ammonia ; filter through flannel, adding some Distilled Water if necessary ; evaporate to the consistence of syrup, the presence of a very slight excess of ammonia being maintained ; dry in thin layers on flat porcelain or glass plates at a temperature not exceeding 40° ; remove the dry flakes of Iron and Ammonium Citrate.

Characters and Tests.—In thin, dark red, transparent scales. Taste slightly sweet and astringent. Soluble in 0·5 part of *water* ; almost insoluble in *alcohol* (90 per cent.). Aqueous solution slightly acid to *litmus*. Yields, when in-

cinerated with free access of air, from 31 to 32 per cent. of ferric oxide, which is not alkaline to *litmus* (absence of fixed alkali). When a solution of 1 gramme in 10 millilitres of *water* is heated with a slight excess of *solution of potassium hydroxide*, ammonia is evolved and ferric hydroxide is precipitated; the filtrate from this, acidified with *acetic acid*, does not give any crystalline precipitate (absence of tartrates). Yields not more than the slightest characteristic *reaction* for sulphates. *Arsenic limit* 5 parts per million.

Dose.

Metric.
3 to 6 decigrams.

Imperial.
5 to 10 grains.

FERRI ET POTASSII TARTRAS

Iron and Potassium Tartrate

Synonyms—Ferrum Tartaratum: Tartarated Iron

Solution of Ferric Sulphate . . .	200.0 millilitres
Solution of Ammonia . . .	320.0 millilitres,
	or a sufficient quantity
Acid Potassium Tartrate, in	
powder	66.5 grammes
Distilled Water	a sufficient quantity

From the Solution of Ferric Sulphate prepare ferric hydroxide as directed under 'Ferri et Ammonii Citras.'

Mix the ferric hydroxide intimately with the Acid Potassium Tartrate in a porcelain dish; let the mixture stand for twenty-four hours; heat to a temperature not exceeding 60°, add gradually six hundred millilitres of Distilled Water; stir constantly until nothing more will dissolve; filter; evaporate at a temperature not exceeding 60° to the consistence of syrup; dry in thin layers on flat porcelain or glass plates at a temperature not exceeding 40°; remove the dry flakes of Iron and Potassium Tartrate.

Characters and Tests.—In thin transparent scales of a deep garnet colour; taste somewhat sweetish and astringent. Soluble in *water*, sparingly soluble in *alcohol* (90 per cent.). *Arsenic limit* 5 parts per million. The aqueous solution, acidified with *hydrochloric acid*, yields a copious blue precipitate with *solution of potassium ferrocyanide*. When a solution of 1 gramme in 10 millilitres of *water* is boiled with a slight excess of *solution of potassium hydroxide*, a reddish-brown precipitate separates, and the filtered solution, slightly acidified with *acetic acid*, yields, as it cools, a crystalline deposit. Yields not less than 30 per cent. of ferric oxide when incinerated with free access of air, the ash washed with *water* and again incinerated.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
3 to 6 decigrams.	5 to 10 grains.

FERRI ET QUININÆ CITRAS

Iron and Quinine Citrate

Solution of Ferric Sulphate . . .	180 millilitres
Quinine Sulphate	40 grammes
Diluted Sulphuric Acid	60 millilitres
Citric Acid	123 grammes
Solution of Ammonia	} of each a sufficient quantity.
Distilled Water	

From the Solution of Ferric Sulphate prepare ferric hydroxide as directed under 'Ferri et Ammonii Citras.'

Mix the Quinine Sulphate with eight times its weight of Distilled Water; add the Diluted Sulphuric Acid; when the salt is dissolved precipitate the quinine with a slight excess of Solution of Ammonia; collect the precipitate on a filter; wash it with twelve hundred millilitres of Distilled Water.

Dissolve the Citric Acid in its own weight of Distilled Water; warm the solution on a water-bath; add the ferric hydroxide, previously well drained; stir them together; when the hydroxide has dissolved, add the precipitated quinine; continue the stirring until this also has dissolved; let the solution cool; add, in small quantities at a time, sixty millilitres of Solution of Ammonia, diluted with eighty millilitres of Distilled Water; stir briskly, allowing the quinine which separates with each addition of ammonia to dissolve before the next addition is made; filter the solution; evaporate it to the consistence of a thin syrup; dry the latter in thin layers on flat porcelain or glass plates at a temperature not exceeding 40°; remove the dry flakes of Iron and Quinine Citrate.

Characters and Tests.—In thin scales of a greenish golden-yellow colour, somewhat deliquescent; taste bitter, chalybeate. Soluble in 0·5 part of water. The solution is very slightly acid, and yields precipitates which are reddish-brown with *solution of potassium hydroxide*, white with *solution of ammonia*, blue with *solution of potassium ferrocyanide* and with *solution of potassium ferricyanide*. *Arsenic limit* 5 parts per million. Ash, when moistened with water, not alkaline to *litmus* (absence of fixed alkali). 5 grammes, dissolved in 45 millilitres of water and treated with excess of *solution of ammonia*, yield a white precipitate, which, when dissolved out by repeated treatment of the liquid with *chloroform*, the latter evaporated, and the residue dried at 110°, weighs not less than 0·75 gramme. This precipitate is almost entirely soluble in a little *ether*; on incineration it leaves not more than a minute residue; neutralised with *diluted sulphuric acid* and crystallised, it possesses the characters and answers to the tests for 'Quininæ Sulphas.'

Dose.

Metric.
3 to 6 decigrams.

Imperial.
5 to 10 grains.

FERRI PHOSPHAS SACCHARATUS

Saccharated Iron Phosphate

Saccharated Iron Phosphate is ferrous phosphate, more or less oxidised, mixed with glucose. It contains not less than 60 per cent. of ferrous salts calculated as ferrous phosphate, $\text{Fe}_3(\text{PO}_4)_2, 8\text{H}_2\text{O}$.

Ferrous Sulphate	120 grammes
Sodium Phosphate	110 grammes
Sodium Carbonate	50 grammes
Glucose	40 grammes
Distilled Water, boiling,	a sufficient quantity

Dissolve twenty grammes of the Glucose in four hundred millilitres of the Distilled Water, and dissolve the Ferrous Sulphate in the solution. Dissolve the Sodium Phosphate in four hundred millilitres of the Distilled Water, and to this add the solution of the Ferrous Sulphate, stirring constantly. Then add the Sodium Carbonate previously dissolved in four hundred millilitres of the Distilled Water. Mix thoroughly, and allow the precipitate to subside. Decant the supernatant liquid, wash the precipitate with two successive quantities of two thousand millilitres of the Distilled Water, mix it with the remainder of the Glucose, and dry at a temperature not exceeding 100° . Powder the product and preserve it in a stoppered bottle.

Characters and Tests.—A slate-blue, amorphous powder. Taste sweetish, chalybeate. Partially soluble in water, soluble in *hydrochloric acid*. The acid solution yields blue precipitates with *solutions of potassium ferricyanide* and *ferricyanide*; when treated with *tartaric acid* and excess of *solution of ammonia*, and subsequently with *solution of magnesium ammonio-sulphate*, it gives a white granular precipitate. 1 gramme dissolved in excess of warm concentrated *phosphoric acid* does not cease to yield a blue precipitate with *solution of potassium ferricyanide* until 35.9 millilitres of *N/10 solution of potassium bichromate* have been added. *Arsenic limit* 5 parts per million.

*Dose.**Metric.*

3 to 6 decigrams.

Imperial.

5 to 10 grains.

FERRI SULPHAS**Ferrous Sulphate**

Ferrous Sulphate may be prepared by the interaction of diluted sulphuric acid and iron. It contains not less than 97·5 per cent. of pure ferrous sulphate, $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$.

Characters and Tests.—Oblique rhombic prisms of a greenish colour, or a crystalline powder of a pale bluish-green colour; taste astringent. Insoluble in *alcohol* (90 per cent.), soluble in less than 2 parts of *water* previously boiled and cooled, giving a clear solution (absence of oxy-sulphate). Yields the *reactions* characteristic of ferrous salts and of sulphates. 1 gramme dissolved in 20 millilitres of *diluted sulphuric acid* decolorises not less than 35 millilitres of *N/10 solution of potassium permanganate*. Yields no characteristic *reactions* for copper or zinc. *Arsenic limit* 2 parts per million.

*Dose.**Metric.*

6 to 30 centigrams.

Imperial.

1 to 5 grains.

FERRI SULPHAS EXSICCATUS**Exsiccated Ferrous Sulphate**

Exsiccated Ferrous Sulphate is Ferrous Sulphate deprived of part of its water of crystallisation, and contains not less than 77 per cent. of anhydrous ferrous sulphate, FeSO_4 .

Characters and Tests.—A nearly white powder, slowly

but entirely soluble in *water*. 0·5 gramme dissolved in *water* and acidified with *sulphuric acid* decolorises not less than 25·3 millilitres of *N/10 solution of potassium permanganate*. *Arsenic limit* 5 parts per million.

Dose.

Metric.

3 to 20 centigrams.

Imperial.

$\frac{1}{2}$ to 3 grains.

FERRUM

Iron

Iron is annealed iron wire, having a diameter of about 0·1 millimetre (about No. 35 wire gauge), or wrought-iron nails, free from oxide.

Test.—*Arsenic limit* 200 parts per million.

FERRUM REDACTUM

Reduced Iron

Reduced Iron may be obtained by reducing ferric hydroxide, heated to dull redness, by means of a stream of dry hydrogen. It contains not less than 80 per cent. of metallic iron, with a variable amount of iron oxide.

Characters and Tests.—A fine greyish-black powder, strongly attracted by the magnet, and producing metallic streaks when rubbed with firm pressure in a mortar. Dissolves in *hydrochloric acid* with evolution of hydrogen, and without any odour of hydrogen sulphide, the solution giving a light-blue precipitate with *solution of potassium ferrocyanide*. When 0·25 gramme, in very fine powder, is added to a hot solution of 1·25 grammes of *copper sulphate*

in 20 millilitres of *water*, the mixture kept hot and occasionally well shaken during ten minutes, and then rapidly filtered with the minimum of exposure to air, the filtrate decolorises not less than 35·8 millilitres of *N/10 solution of potassium permanganate*. Not more than 1 per cent. is insoluble in *hydrochloric acid*. *Arsenic limit* 200 parts per million.

Dose.

Metric.
6 to 30 centigrams.

Imperial.
1 to 5 grains.

FILIX MAS

Male Fern

Male Fern is the rhizome of *Dryopteris Filix-mas*, *Schott.* Collected late in the autumn, divested of its roots, leaves, and dead portions, and carefully dried. Should not be kept more than a year.

Characters.—From seven to fifteen centimetres or more in length; the rhizome itself about two to two and a half centimetres in diameter. Entirely covered with the hard, persistent, curved, angular, dark brown bases of the petioles, which bear numerous brown membranous scales. Petioles green internally and exhibiting in transverse section about eight pale yellow fibro-vascular bundles arranged in a diffuse circle (distinction from the petioles of *Athyrium Filix-foemina*, *Roth.*). Rhizome brown externally, green internally. In transverse section of the rhizome, stalked secreting glands in intercellular spaces. Margins of the membranous scales with two-celled projections but no glands; at the base two minute glands (distinction from the rhizomes of certain other ferns). Feeble but disagreeable odour; taste sweetish and astringent at first, but subsequently bitter and nauseous.

FŒNICULI FRUCTUS**Fennel Fruit**

Fennel Fruit is the dried ripe fruit of *Fœniculum vulgare*, *Mill.*, collected from cultivated plants.

Characters and Test.—Small, oblong, straight or slightly curved, from three to ten millimetres long, and from two to four millimetres in diameter. Greenish or greenish-brown. Each of the two mericarps with five prominent principal ridges and six large vittæ. Aromatic odour; taste strong, sweet and camphoraceous. Ash not more than 11 per cent.

GALLA**Galls**

Galls are excrescences on *Quercus infectoria*, *Olivier*, resulting from the deposition of an egg or eggs of *Cynips gallæ tinctoriæ*, *Olivier*.

Characters.—Hard, heavy, subglobular, from twelve to eighteen millimetres or more in diameter, tuberculated on the surface, the tubercules and intervening spaces being smooth; dark bluish-green or dark olive-green externally, yellowish or brownish-white within, with a small central cavity. Galls sink in water and exhibit no perforation. No odour; taste intensely astringent.

GELATINUM**Gelatin**

Gelatin is the air-dried product of the action of boiling water on animal fibrous tissues such as skin, tendons, ligaments, and bones.

Characters and Tests.—In almost colourless, translucent sheets or shreds. Insoluble in *alcohol* (90 per cent.) and *ether*; soluble in *acetic acid*. A solution in 50 parts of hot *water* is inodorous and solidifies to a jelly on cooling. An aqueous solution yields a precipitate with *solution of tannic acid*, but not with solutions of other acids, nor with dilute solution of *alum*, *solution of lead acetate*, or *T.Sol. of ferric chloride*. Ash not more than 2 per cent.

GELSEMII RADIX

Gelsemium Root

Gelsemium Root is the dried rhizome and roots of *Gelsemium nitidum*, *Michaux.*

Characters.—In nearly cylindrical pieces about fifteen centimetres or more long, and usually from six to eighteen millimetres thick; occasionally with fibrous rootlets attached. Fracture splintery. In transverse section, a thin cortex, and a porous, yellowish, distinctly radiate wood with numerous, conspicuous, straight medullary rays. Rhizome usually with a brown or dark brownish-violet cork, often much fissured; nearly straight, and exhibiting silky fibres in the bast. Root yellowish-brown, finely wrinkled, and somewhat tortuous. Slightly aromatic odour; taste bitter.

GENTIANÆ RADIX

Gentian Root

Gentian Root is the dried rhizome and root of *Gentiana lutea*, *Linn.*

Characters and Tests.—In nearly cylindrical pieces, entire or longitudinally split, varying in length, but seldom exceeding two and a half centimetres in thickness; yellowish-

brown externally, and longitudinally wrinkled. Rhizome with closely approximated encircling leaf scars, and frequently terminated by a bud. Tough when slightly moist, but brittle when dry. Fractured surface nearly uniform reddish-yellow. Parenchymatous tissue of rhizome and root abundant, containing small oil globules and minute crystals of calcium oxalate but not more than an occasional starch grain; vessels reticulated; no sclerenchymatous cells or fibres. Characteristic odour; taste at first slightly sweet but afterwards bitter. When 5 grammes of the powdered Root are macerated with 100 millilitres of *water* for twenty-four hours, shaken occasionally and filtered, 10 millilitres of the filtrate yield on evaporation in a flat-bottomed dish not less than 0.165 gramme of residue dried at 100°. Ash not more than 6 per cent.

GLUCOSUM

Glucose

Glucose is a mixture of dextrose and other substances, and is obtained by the hydrolysis of starch.

Characters and Tests.—A very viscous syrup, almost colourless. No odour; taste sweetish. Freely soluble in *water*, the solution being dextrorotatory, and giving a red precipitate when warmed with *solution of potassio-cupric tartrate*. 2 grammes dried at 100° in a thin film in a flat-bottomed dish do not lose more than 0.4 gramme (limit of moisture). When 10 grammes are dissolved in 100 millilitres of *water*, to which 10 millilitres of *N/10 solution of iodine* have previously been added, on shaking the mixture and immediately titrating with *N/10 solution of sodium thiosulphate*, not less than 6.8 millilitres of the latter solution are required (limit of sulphites). *Arsenic limit* 2 parts per million. Ash not more than 0.5 per cent.

GLUSIDUM

Gluside

Gluside, or benzoic sulphinide, $C_7H_5NSO_3$, the anhydride of orthosulphamido-benzoic acid, may be prepared from toluene.

Characters and Tests.—A white crystalline powder. Taste, in dilute solution, intensely sweet. Soluble in 400 parts of *water*, and in 38 parts of *alcohol* (90 per cent.); soluble also in solutions of alkalies and of alkaline carbonates, the neutral sodium salt being known as 'soluble gluside.' Completely soluble in 12 parts of *acetone*. 1 gramme heated for four hours on a water-bath with 10 millilitres of a mixture of 4 volumes of *sulphuric acid* and 3 volumes of *water* completely dissolves, and when the solution is diluted with an equal volume of *water* and allowed to stand for twenty-four hours no crystals separate. Gently warmed for a short time with *sulphuric acid* no blackening occurs. Ash not more than 0·5 per cent.

GLYCERINUM

Glycerin

Glycerin, or glycerol, is a trihydric alcohol, $C_3H_5(OH)_3$, associated with a small percentage of water; it is obtained by the hydrolysis of fats and fixed oils by means of alkalies or of superheated steam.

Characters and Tests.—A clear, colourless, hygroscopic, syrupy liquid. No odour; taste sweet, followed by a sensation of warmth. Miscible with *water*, and with *alcohol* (90 per cent.). Insoluble in *ether*, in *chloroform*, and in fixed oils. Specific gravity 1·260. When heated decomposes with evolution of irritating vapours. Neutral to *litmus*. A 10 per cent. aqueous solution yields no char-

acteristic *reactions* for ammonium, chlorides, or sulphates. Assumes, when heated, not more than a faint yellow and no pink coloration, yields not more than a very slight charred residue and no odour of burnt sugar (absence of sugar). Undergoes no darkening in colour when mixed with an equal volume of *solution of ammonia* and a few drops of *solution of silver nitrate*, the mixture being kept protected from light and the observation being made after a lapse of five minutes (absence of formic acid, acrolein). Gently warmed with an equal volume of *diluted sulphuric acid*, the mixture being vigorously shaken, not more than a faint odour is noticeable (absence of fatty acids). Shaken with an equal volume of *sulphuric acid*, the mixture being kept cool, not more than a very slight straw coloration is produced (absence of extraneous organic matter). A mixture of 10 millilitres of Glycerin with 40 millilitres of *water*, 1 drop of *solution of ammonia* and 1 drop of *solution of tannic acid* assumes not more than a faint and transient pink or purple coloration (limit of iron). When tested for lead according to the quantitative test described in Appendix V, but using 10 grammes in each Nessler glass, no difference is observed upon the addition of the *solution of sodium sulphide* to one of the solutions (absence of lead). When the foregoing test is repeated, but omitting the addition of *solution of ammonia* and of *solution of potassium cyanide*, and adding to each solution 1 millilitre of *diluted hydrochloric acid*, no difference in colour is observed upon the addition of *solution of hydrogen sulphide* to one of the solutions (absence of copper). *Arsenic limit* 2 parts per million. No appreciable ash.

Dose.

Metric.
4 to 8 mils,

Imperial.
1 to 2 fluid drachms.

GLYCERINUM ACIDI BORICI**Glycerin of Boric Acid**

Boric Acid	300 grammes
Glycerin sufficient to produce. . .	1000 grammes

Add the Boric Acid to four hundred and fifty grammes of the Glycerin, boil until dissolved, constantly stirring; evaporate at a temperature rising to but not exceeding 150° until the weight of the mixture has been reduced to five hundred grammes, the stirring being continued. Add sufficient Glycerin to produce the required weight; mix thoroughly.

GLYCERINUM ACIDI CARBOLICI**Glycerin of Phenol**

Phenol	20 grammes
Glycerin sufficient to produce . . .	100 millilitres

Triturate the Phenol with the Glycerin in a warmed mortar until solution is effected.

GLYCERINUM ACIDI TANNICI**Glycerin of Tannic Acid**

Tannic Acid	20 grammes
Glycerin sufficient to produce . . .	100 millilitres

Triturate the Tannic Acid with the Glycerin in a warmed mortar until solution is effected.

GLYCERINUM ALUMINIS**Glycerin of Alum**

Purified Alum	20·0 grammes
Distilled Water	7·5 millilitres
Glycerin sufficient to produce . .	120·0 millilitres

Powder the Alum, triturate with the Distilled Water and Glycerin until solution is effected, warming slightly if necessary; set aside; pour off the clear liquid from any deposit that may be formed.

GLYCERINUM AMYLI**Glycerin of Starch**

Starch	20 grammes
Glycerin	130 millilitres
Distilled Water	30 millilitres

Mix; heat, stirring constantly, until a translucent jelly is formed.

GLYCERINUM BORACIS**Glycerin of Borax**

Purified Borax	20 grammes
Glycerin	120 millilitres

Powder the Borax, and triturate with the Glycerin in a warmed mortar until solution is effected.

GLYCERINUM PEPSINI**Glycerin of Pepsin**

Pepsin	100·0 grammes
Hydrochloric Acid	11·5 millilitres
Glycerin	600·0 millilitres
Distilled Water sufficient to produce	1000·0 millilitres

Mix the Hydrochloric Acid, Glycerin, and two hundred and sixty millilitres of the Distilled Water; add the Pepsin; dissolve; add sufficient Distilled Water to produce the required volume; set aside for twenty minutes; filter.

Dose.

Metric.
4 to 8 mls.

Imperial.
1 to 2 fluid drachms.

5 mls of this preparation contain 0·5 gramme of Pepsin;
1 fluid drachm contains about $5\frac{1}{2}$ grains.

**GLYCERINUM PLUMBI SUBACETATIS****Glycerin of Lead Subacetate****Strong Solution of Lead**

Subacetate	500 millilitres
Glycerin	500 millilitres
Distilled Water	a sufficient quantity

Evaporate the Strong Solution of Lead Subacetate to dryness on a water-bath; add the Glycerin; warm gently until dissolved; cool; add Distilled Water till the specific gravity of the mixture is 1·48; filter, if necessary.

GLYCERINUM TRAGACANTHÆ

Glycerin of Tragacanth

Tragacanth, in powder	10 grammes
Glycerin	30 millilitres
Distilled Water	10 millilitres

Mix the Glycerin with the Tragacanth; add the Distilled Water; triturate until a homogeneous paste is produced.

GLYCYRRHIZÆ RADIX

Liquorice Root

Liquorice Root is the peeled root and peeled subterranean stem of *Glycyrrhiza glabra*, *Linn.*, and other species.

Characters and Tests.—In nearly cylindrical pale yellow pieces with a fibrous surface and coarsely fibrous fracture. In transverse section, bark thick, with numerous groups of bast fibres radiately arranged and accompanied by cells containing prismatic crystals of calcium oxalate; wood porous, distinctly radiate, yellow, with similar fibres and also large vessels with thick, yellow, pitted or reticulate walls; in the parenchymatous tissue of both bark and wood abundant small starch grains. Powdered Root pale yellow, with numerous bast fibres, often in yellowish groups and accompanied by prisms of calcium oxalate; pitted or sometimes reticulated vessels and oval or rounded starch grains not more than 20 microns long; free from fragments of dark brown cork and from sclerenchymatous cells; colours *sulphuric acid* orange-yellow. Faint, characteristic odour; taste sweet and almost free from bitterness. When 5 grammes are macerated with 50 millilitres of *chloroform water* for twenty-four hours, shaken occasionally and filtered, 10 millilitres of the filtrate evaporated in a flat-bottomed dish yield not less than 0.100 gramme of residue dried at 100°. Ash not more than 6 per cent.

GOSSYPH RADICIS CORTEX**Cotton Root Bark**

Cotton Root Bark is the dried root-bark of *Gossypium herbaceum*, *Linn.*, and of other cultivated species of *Gossypium*.

Characters.—In strips or quilled pieces; thin, tough and fibrous. Cork thin, pale brown, longitudinally striated; removed in places and then disclosing the orange-brown cortex. Inner surface whitish, silky and finely striated. Secondary bast readily separable into thin fibrous laminæ. No odour; taste slightly acrid and astringent.

GOSSYPHIUM**Cotton**

Synonym—Cotton Wool

Cotton consists of the hairs of the seed of *Gossypium herbaceum*, *Linn.*, and of other species of *Gossypium*, freed from fatty matter.

Characters and Tests.—In long, white, soft filaments, each consisting of an elongated cell, appearing, when seen under the microscope, as a flattened, twisted band with slightly thickened rounded edges. Inodorous and tasteless. Soluble in *ammoniacal solution of copper oxide*. Readily wetted by *water*, and not imparting to it either an alkaline or an acid reaction. Ash not more than 0.5 per cent.

GRINDELIA**Grindelia**

Grindelia consists of the dried leaves and flowering tops of *Grindelia camporum*, *Greene*.

Characters.—Stems slender, yellow, smooth. Leaves three to five centimetres long, oblong or spatulate, sessile or amplexicaul, pale green, rigid, brittle, smooth, glabrous; surface minutely dotted; margin coarsely serrate. Flower-heads yellow, hard, resinous, with several rows of lanceolate-acuminate, recurved bracts. Fruits bi-auriculate or unidentate at the summit, with a pappus consisting of two thick, stiff bristles. All parts more or less resinous. Slightly aromatic odour; taste aromatic and bitter.

GUAIACI LIGNUM

Guaiacum Wood

Guaiacum Wood is the heart-wood of *Guaiacum officinale*, *Linn.*, or of *Guaiacum sanctum*, *Linn.*

Characters and Test.—Dark greenish-brown, dense, hard; heavier than water. In transverse section, abundant sclerenchymatous fibres, scattered, isolated vessels, and medullary rays one cell wide. Odour, on warming, somewhat aromatic; taste slightly acrid. An alcoholic tincture prepared from the Wood assumes a blue colour on the addition of diluted *T.Sol. of ferric chloride*.

GUAIACI RESINA

Guaiacum Resin

Guaiacum Resin is the resin obtained from the stem of *Guaiacum officinale*, *Linn.*, or of *Guaiacum sanctum*, *Linn.*

Characters and Tests.—In masses, or sometimes in large more or less rounded tears. Brittle; fracture vitreous; thin splinters transparent, from yellowish-green to reddish-brown. Powdered Resin greyish, but becoming green on exposure to light and air. Odour, on warming, some-

what aromatic; taste slightly acid. A solution in *alcohol* (90 per cent.) is coloured blue by diluted *T.Sol. of ferric chloride*. 1 gramme of the powdered Resin, shaken for five minutes with 5 millilitres of *petroleum spirit*, yields a colourless filtrate which does not become green when shaken with an equal volume of *diluted solution of copper acetate* (absence of colophony). Not more than 10 per cent. insoluble in *alcohol* (90 per cent.). Ash not more than 4 per cent.

Dose.

Metric.

3 to 10 decigrams.

Imperial.

5 to 15 grains.

GUAIACOL

Guaiacol

Guaiacol, $C_7H_8O_2$, may be prepared synthetically or obtained by the fractional distillation of beech tar creosote.

Characters and Tests.—A colourless liquid, or colourless crystals melting at about 28° . Characteristic, tarry odour; taste caustic, very pungent. Soluble in 80 parts of *water*; freely soluble in *alcohol* (90 per cent.), in *ether*, in *glycerin*, and in fixed oils. Liquid Guaiacol optically inactive; specific gravity 1.16 to 1.20. Distils between 200° and 205° . A trace of *T.Sol. of ferric chloride* added to 25 millilitres of a 1 per cent. solution of Guaiacol in *alcohol* (90 per cent.) immediately produces a blue colour which changes to emerald-green on the addition of more of the test-solution, and finally becomes yellowish. When liquid Guaiacol is shaken with twice its volume of *petroleum spirit* and allowed to stand, the mixture separates into well defined layers which do not exhibit permanent turbidity. 1 millilitre of liquid Guaiacol dissolves when warmed with 2 millilitres of a 15 per cent. aqueous solution of *sodium hydroxide*; the nearly white mass which results on cooling yields a clear solution with 25 millilitres of *water* (absence of oily hydrocarbons).

Dose.

<i>Metric.</i>	<i>Imperial.</i>
6 to 30 centimils.	1 to 5 minims.

GUAIACOL CARBONAS

Guaiacol Carbonate

Guaiacol Carbonate, $(C_7H_7O)_2CO_3$, is the carbonic ester of guaiacol. It may be obtained by the interaction of carbonyl chloride with sodium guaiacolate.

Characters and Tests.—A white crystalline powder, inodorous and almost tasteless. Insoluble in *water*; sparingly soluble in *alcohol* (90 per cent.), the solution being neutral to *litmus*. Melting point 85° to 88° . When the liquid obtained by heating Guaiacol Carbonate with *N/20 solution of sodium hydroxide* is acidified, carbon dioxide is evolved and guaiacol is liberated. A saturated solution in *alcohol* (90 per cent.) does not assume a greenish or bluish colour on the addition of *T.Sol. of ferric chloride* (absence of free guaiacol). No appreciable ash.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
3 to 10 decigrams.	5 to 15 grains.

GUMMI INDICUM

Indian Gum

Synonym—Ghatti Gum

Indian Gum is a gummy exudation from the stem of *Anogeissus latifolia*, *Wall.*

Characters and Tests.—In vermiform or rounded tears of varying size, colourless or pale yellow; surface dull, fracture vitreous. Slight odour; taste insipid and mucil-

aginous. Entirely soluble in *water*, forming a viscous, adhesive mucilage. Insoluble in *alcohol* (90 per cent.). The aqueous solution is gelatinised by the addition of *alcohol* (90 per cent.), or *solution of lead subacetate*; but it is unaffected by the addition of *T.Sol. of ferric chloride* or of *solution of lead acetate* (distinction from Amrad and certain other gums). It is not coloured blue or brown by a small quantity of *N/10 solution of iodine* (absence of starch or commercial 'dextrin'). Ash not more than 4 per cent.

In India and the Eastern Divisions of the Empire, Indian Gum may be employed in making the official preparations for which Gum Acacia is directed to be used, one part of the former being taken for every two parts ordered of the latter (see '*Mucilago Gummi Indici*').

HÆMATOXYLI LIGNUM

Logwood

Logwood is the heartwood of *Hæmatoxylon campechianum*, *Linn.*

Characters and Test.—Hard, heavy, dull orange to purplish red externally and reddish brown internally. In transverse section, alternating yellowish-brown and dark brown wavy tangential lines. In the form of chips or coarse powder, it is free from signs of fermentation, and from green metallic lustre. Slight, agreeable odour; taste sweetish, astringent. Readily imparts a reddish-violet colour to *water* made slightly alkaline with *solution of sodium hydroxide*.

HAMAMELIDIS CORTEX

Hamamelis Bark

Synonym—Witch Hazel Bark

Hamamelis Bark is the dried bark of *Hamamelis virginiana*, *Linn.*

Characters.—In curved or channelled pieces about one and a half millimetres thick, and from one-half to two decimetres long, sometimes covered with a silvery-grey or dark-grey scaly cork marked with transverse lenticels, but frequently freed from the cork, and then exhibiting a nearly smooth reddish-brown outer surface. Inner surface pale reddish-pink, and finely striated longitudinally; fracture laminated and coarsely fibrous. In transverse section, a cortex containing prismatic crystals of calcium oxalate, a complete ring of sclerenchymatous cells, and numerous tangentially elongated groups of bast fibres. No marked odour; taste astringent.

HAMAMELIDIS FOLIA

Hamamelis Leaves

Synonym—Witch Hazel Leaves

Hamamelis Leaves are the fresh or dried leaves of *Hamamelis virginiana*, *Linn.*

Characters.—Broadly oval in outline, from seven to fifteen centimetres long. Upper surface dark green or brownish-green, under surface paler; apex obtuse, margin sinuate; narrowed towards the base, oblique, slightly cordate, and shortly petiolate. Veins pinnate and prominent on the under surface, where they are furnished with stellate hairs. No marked odour; taste astringent and slightly bitter.

Heroin Hydrochloride, p. 115

HEXAMINA

Hexamine

= *Urotropin*

Synonym—Hexamethylenetetramine

Hexamine may be obtained by the interaction of ammonia with formic aldehyde. It contains not less than 98 per cent. of hexamethylenetetramine, $C_6H_{12}N_4$.

Characters and Tests.—Colourless crystals or crystalline powder. Inodorous; taste at first sweetish, afterwards bitter. Soluble in 1·5 parts of *water*, and in 8 parts of *alcohol* (90 per cent.). The aqueous solution is alkaline to *litmus*. Partially decomposes when heated to 263°, and sublimes without fusing. When heated with *diluted sulphuric acid* formic aldehyde is evolved, and when the solution is cooled and made alkaline with *solution of sodium hydroxide* ammonia is liberated. 0·1 gramme warmed with 5 millilitres of *sulphuric acid* and 0·1 gramme of *salicylic acid* develops a carmine colour. A solution of 1 gramme in *water*, mixed with 35 millilitres of *N/1 solution of sulphuric acid*, evaporated on a water-bath until the odour of formaldehyde has disappeared, requires for neutralisation not more than 7 millilitres of *N/1 solution of sodium hydroxide*, *solution of methyl orange* being used as indicator. No appreciable ash.

*Dose.**Metric.*

3 to 10 decigrams.

Imperial.

5 to 15 grains.

HIRUDO

Leeches

Leeches are (1) *Hirudo medicinalis*, *Linn.*, the Speckled Leech, and (2) *Hirudo quinquestriata*, *Schmarda*, the Five-striped or Australian Leech.

Characters.—Body soft, smooth, five centimetres or more long, tapering to each extremity, plano-convex, marked with from ninety to one hundred fine annulations. Anterior extremity terminated by a small sucker surrounding the tri-radiate jaws, the posterior extremity by a large sucker. (1) Dorsal surface olive-green, with six longitudinal stripes; ventral surface greenish-yellow, with black spots. (2) Dorsal surface greenish-brown, with five longitudinal stripes; ventral surface greenish-yellow, not spotted.

HOMATROPINÆ HYDROBROMIDUM

Homatropine Hydrobromide

Homatropine Hydrobromide, $C_{16}H_{21}NO_3 \cdot HBr$, is the hydrobromide of an alkaloid prepared from atropine.

Characters and Tests.—White crystalline powder, or aggregations of minute crystals. Soluble in about 6 parts of water, and in about 18 parts of alcohol (90 per cent.), the solutions being neutral to *litmus*. Yields the *reactions* characteristic of bromides. A 1 per cent. aqueous solution applied to the eye powerfully dilates the pupil. 1 millilitre made alkaline with *solution of ammonia*, shaken with *chloroform*, the chloroformic solution being then separated and evaporated, yields a residue which turns first yellow and then brick-red when warmed with 1.5 millilitres of a 2 per cent. solution of *mercuric chloride* in alcohol (60 per cent.). When treated with *nitric acid* and *alcoholic solution of potassium hydroxide* as described under 'Atropina,' a reddish-yellow colour is produced, not changing to violet (distinction from atropine).

*Dose.**Metric.*

1 to 2 milligrams.

Imperial. $\frac{1}{84}$ to $\frac{1}{32}$ grain.

HYDRARGYRI IODIDUM RUBRUM

Red Mercuric Iodide

Synonyms—Biniodide of Mercury : Mercuric Iodide

Red Mercuric Iodide, HgI_2 , is obtained by the interaction of aqueous solutions of mercuric chloride and potassium iodide.

Characters and Tests.—A crystalline powder of a vermillion colour, becoming yellow when heated to about 150° .

Almost insoluble in *water*, sparingly soluble in *alcohol* (90 per cent.), freely and entirely soluble in *ether* (absence of mercurous iodide), and in *solution of potassium iodide*. Yields the *reactions* characteristic of mercuric salts and of iodides. Volatilises at a temperature under redness, leaving not more than a trace of fixed residue. When 0·5 gramme is well shaken with 10 millilitres of *water* and filtered, the filtrate is not coloured more than slightly brown by *hydrogen sulphide* (limit of mercuric chloride), and does not become more than opalescent on the addition of *solution of silver nitrate* (limit of chloride).

Dose.

Metric.

2 to 4 milligrams.

Imperial.

$\frac{1}{32}$ to $\frac{1}{16}$ grain.

HYDRARGYRI OXIDUM FLAVUM

Yellow Mercuric Oxide

Yellow Mercuric Oxide may be obtained by the interaction of aqueous solutions of mercuric chloride and sodium hydroxide. It contains not less than 99·3 per cent. of pure mercuric oxide, HgO .

Characters and Tests.—A yellow powder; insoluble in *water*; readily soluble in *hydrochloric acid*, the solution yielding the *reactions* characteristic of mercuric salts. When 1 gramme is macerated with 5 millilitres of *water* for five minutes, the mixture is neutral to *litmus*. When gently heated it assumes a red colour. The solution obtained by dissolving 0·5 gramme in 2 millilitres of *nitric acid* and diluting with 20 millilitres of *water* requires not less than 45·8 millilitres of *N/10 solution of ammonium thiocyanate* to produce a permanent pink coloration, *solution of ferric sulphate* being used as indicator. Heated to incipient redness it is resolved into oxygen and the vapour of mercury, leaving not more than 0·5 per cent. of fixed residue.

HYDRARGYRI OXIDUM RUBRUM**Red Mercuric Oxide**

Synonym—Red Precipitate

Red Mercuric Oxide may be obtained by heating mercurous nitrate until acid vapours cease to be evolved. Contains not less than 99·3 per cent. of pure mercuric oxide, HgO .

Characters and Tests.—Orange-red powder, or crystalline scales. Insoluble in *water*; soluble in *hydrochloric acid*, the solution yielding the *reactions* characteristic of mercuric salts. Gently heated it becomes dark violet, but resumes its orange-red colour on cooling. Heated in a dry test-tube it does not evolve orange fumes (absence of nitrates). Responds to the quantitative test described under 'Hydrargyri Oxidum Flavum.' Heated to incipient redness it is resolved into oxygen and the vapour of mercury, leaving not more than 0·3 per cent. of fixed residue.

HYDRARGYRI PERCHLORIDUM**Mercuric Chloride**

Synonyms—Corrosive Sublimate: Perchloride of Mercury:
Bichloride of Mercury

Mercuric Chloride may be obtained as a sublimate by heating a mixture of mercuric sulphate, sodium chloride, and black oxide of manganese. It contains not less than 98·6 per cent. of pure mercuric chloride, HgCl_2 .

Characters and Tests.—Heavy, colourless, crystalline masses, possessing a highly acrid, metallic taste. Soluble in 18 parts of *water*, and in 4 parts of *alcohol* (90 per cent.), or of *ether*. Yields the *reactions* characteristic of mercuric salts and of chlorides. When heated Mercuric Chloride

sublimes without decomposition, leaving only a trace of fixed residue. Yields not less than 72·8 or more than 73·8 per cent. of mercury when tested by the following process :—

Dissolve 0·5 gramme in 20 millilitres of *water* in a tared beaker-flask, add 10 millilitres of *hypophosphorous acid*, or sufficient to reduce the whole of the mercuric chloride present, and heat on a water-bath until the particles of mercury that separate collect at the bottom of the flask. Pour the contents of the flask on a tared filter-paper, wash both the flask and filter-paper successively with *water*, *alcohol* (90 per cent.), and *ether*; dry over *sulphuric acid*, and weigh the metallic precipitate.

Dose.

Metric.

2 to 4 milligrams.

Imperial.

$\frac{1}{32}$ to $\frac{1}{16}$ grain.

HYDRARGYRI SUBCHLORIDUM

Mercurous Chloride

Synonyms—Calomel: Subchloride of Mercury: Hydrargyri Chloridum

Mercurous Chloride, HgCl , is obtained as a sublimate by heating a mixture of mercurous sulphate and sodium chloride.

Characters and Tests.—A dull white, heavy and nearly tasteless powder, sometimes rendered yellowish by prolonged trituration. Insoluble in *water*, in *alcohol* (90 per cent.) and in *ether*; soluble in a boiling mixture of *nitric* and *hydrochloric acids*, the solution, when diluted with *water*, yielding the *reactions* characteristic of mercuric salts. Volatilises when sufficiently heated, leaving not more than a trace of fixed residue. Warmed with *solution of sodium hydroxide* it becomes black, but does not evolve ammonia (absence of mercuric-ammonium chloride). When

1 gramme is well shaken with 10 millilitres of *water* and filtered, the filtrate is not darkened by *hydrogen sulphide* (absence of mercuric chloride).

Dose.

Metric.

3 to 30 centigrams.

Imperial.

$\frac{1}{2}$ to 5 grains.

HYDRARGYRUM

Mercury

Mercury is a liquid metal which may be obtained from native mercuric sulphide.

Characters and Test.—A silver-white, heavy liquid with a metallic lustre; easily divisible into globules. Readily volatilises when heated, leaving no appreciable fixed residue (absence of metallic and other impurities).

HYDRARGYRUM AMMONIATUM

Ammoniated Mercury

Synonyms—White Precipitate: Ammonio-chloride of Mercury: Mercuric-ammonium Chloride

Mercuric Chloride	.	.	.	.	60 grammes
Solution of Ammonia	.	.	.	.	80 millilitres
Distilled Water	.	.	.	.	a sufficient quantity

Dissolve the Mercuric Chloride in twelve hundred millilitres of the Distilled Water with the aid of heat; pour the liquid into the Solution of Ammonia diluted with four hundred millilitres of Distilled Water, constantly stirring; collect the precipitate on a filter; wash it with two hundred and fifty millilitres of Distilled Water, and dry at a temperature not exceeding 30°.

Characters and Tests.—A white, heavy, tasteless powder on which *water* has but little action, and *alcohol* (90 per cent.) or *ether* no action. Digested with *solution of sodium hydroxide* it evolves ammonia, acquiring a pale yellow colour, and the liquid, filtered and acidified with *nitric acid* gives a white precipitate with *solution of silver nitrate*. Boiled with *solution of stannous chloride* it becomes grey, and yields globules of metallic mercury. Volatilises without fusing when sufficiently heated, leaving no appreciable fixed residue. When 0.3 gramme is triturated in a glass mortar with a few drops of *water*, and transferred to a flask with the aid of 40 millilitres of *water*, the mortar being finally rinsed with a solution of 2 grammes of *potassium iodide* in 10 millilitres of *water* and the rinsings added to the contents of the flask, then, the flask being securely closed and rotated frequently until solution is complete, the liquid thus obtained requires for neutralisation not less than 22.5 millilitres of *N/10 solution of hydrochloric acid*, *solution of methyl orange* being used as indicator (presence of not less than 94.5 per cent. of mercuric-ammonium chloride, NH_2HgCl).

HYDRARGYRUM CUM CRETA

Mercury with Chalk

Synonym—Grey Powder

Mercury	.	.	.	.	.	20 grammes
Prepared Chalk	.	.	.	.	.	40 grammes

Triturate together in a porcelain mortar until the mixture acquires a uniform grey colour and metallic globules cease to be visible to the naked eye.

Characters and Tests.—A light-grey powder, free from grittiness; tends to aggregate into minute globules. Insoluble in *water*; partially dissolved by *diluted hydrochloric acid*, the residual mercury being left in a finely

divided state; the filtered liquid does not yield any white or grey precipitate on the addition of *solution of stannous chloride* (absence of mercuric compounds).

Dose.

<i>Metric.</i>	<i>Imperial.</i>
6 to 30 centigrams.	1 to 5 grains.

HYDRARGYRUM OLEATUM

Oleated Mercury

Synonym—Mercuric Oleate

Yellow Mercuric Oxide . . .	20 grammes
Liquid Paraffin . . .	5 grammes
Oleic Acid . . .	75 grammes

Triturate the Mercuric Oxide with the Liquid Paraffin until it is thoroughly subdivided; add the Oleic Acid with vigorous stirring. Heat the mixture to 50°, triturating occasionally until combination is effected, and, when cool, a yellowish unctuous preparation is obtained.

HYDRASTIS RHIZOMA

Hydrastis Rhizome

Hydrastis Rhizome is the dried rhizome and roots of *Hydrastis canadensis*, *Linn.*

Characters and Test.—Rhizome tortuous, simple or branched, from ten to forty millimetres long and from three to ten millimetres thick; yellowish-brown, becoming darker by age. On the upper surface short ascending branches, usually terminated by cup-shaped scars; on the lower

surface and sides numerous, thin, brittle roots. Fracture clean, resinous; fractured surface brownish-yellow or greenish-yellow. In transverse section, a ring of bright yellow, somewhat distant, wood-bundles. Slight but characteristic odour; taste bitter. Ash not more than 11 per cent.

HYOSCINÆ HYDROBROMIDUM

Hyoscine Hydrobromide

Synonym—Scopolamine Hydrobromide

Hyoscine Hydrobromide, $C_{17}H_{21}NO_4 \cdot HBr \cdot 3H_2O$, is the hydrobromide of an alkaloid, hyoscine or scopolamine, obtained from various plants of the natural order Solanaceæ.

Characters and Tests.—Small, colourless, transparent, non-deliquescent rhombic crystals. Soluble in 4 parts of water. Loses about 12 per cent. of its weight when dried at 100° . Yields the *reactions* characteristic of bromides. A 5 per cent. aqueous solution yields with *solution of sodium hydroxide* a white precipitate soluble in excess of the reagent, but no precipitate with *solution of ammonia*. The alkaloid removed from the ammoniacal solution by shaking with *chloroform*, separating and evaporating the chloroformic solution, when dissolved in *diluted hydrochloric acid*, yields with *solution of auric chloride* a yellow precipitate, which, recrystallised from water acidified with *hydrochloric acid* and dried, melts at 198° to 200° . Treated with *nitric acid* as described under 'Atropina' a violet colour is developed. No appreciable ash.

Dose.

Metric.

0.3 to 0.6 milligram.

Imperial.

$\frac{1}{200}$ to $\frac{1}{100}$ grain.

HYOSCYAMI FOLIA

Hyoscyamus Leaves

Synonym—Henbane Leaves

Hyoscyamus Leaves are the leaves of *Hyoscyamus niger*, *Linn.*, collected from the flowering plants, and dried.

Characters and Test.—Pale green, varying in length but seldom exceeding twenty-five centimetres; mostly sessile; exstipulate, triangular-ovate or ovate-oblong, acute, undulated, irregularly toothed, sinuate or pinnatifid, with conspicuous midrib. On both surfaces, but particularly on the under surfaces and near the veins, long uniserial hairs terminating in pluricellular glands. In the mesophyll prismatic and cluster crystals of calcium oxalate. Strong, characteristic odour; taste bitter, slightly acid.

HYOSCYAMINÆ SULPHAS

Hyoscyamine Sulphate

Hyoscyamine Sulphate, $(C_{17}H_{23}NO_3)_2 \cdot H_2SO_4 \cdot 2H_2O$, is the sulphate of an alkaloid, hyoscyamine, obtained from various plants belonging to the natural order Solanaceæ.

Characters and Tests.—A deliquescent crystalline powder. Soluble in 0.5 part of water. Melting point from 203° to 204° . Yields the reactions characteristic of sulphates. When treated with nitric acid and alcoholic solution of potassium hydroxide, as described under 'Atropina,' a violet coloration is produced. 0.05 gramme, dissolved in 5 millilitres of water acidified with hydrochloric acid, yields with solution of auric chloride a yellow precipitate which, recrystallised from water acidified with hydrochloric acid, forms brilliant golden-yellow scales melting, when dried, at 165° . Dissolves in sulphuric acid without coloration. No appreciable ash.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
0·3 to 0·6 milligram.	$\frac{1}{200}$ to $\frac{1}{100}$ grain.

INFUSUM ALSTONIÆ**Infusion of Alstonia**

Alstonia, bruised	50 grammes
Distilled Water, boiling	1000 millilitres

Infuse in a covered vessel for half an hour ; strain while hot.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
15 to 30 mils.	$\frac{1}{2}$ to 1 fluid ounce.

INFUSUM AURANTII**Infusion of Orange Peel**

Dried Bitter-Orange Peel, cut small	50 grammes
Distilled Water, boiling	1000 millilitres

Infuse in a covered vessel for fifteen minutes ; strain while hot.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
15 to 30 mils.	$\frac{1}{2}$ to 1 fluid ounce.

INFUSUM AURANTII COMPOSITUM**Compound Infusion of Orange Peel**

Dried Bitter-Orange Peel, cut small	25 grammes
Fresh Lemon Peel, cut small	10 grammes
Cloves, bruised	5 grammes
Distilled Water, boiling	1000 millilitres

Infuse in a covered vessel for fifteen minutes ; strain while hot.

*Dose.**Metric.*

15 to 30 mls.

Imperial. $\frac{1}{2}$ to 1 fluid ounce.

See Appendix XII, page , Limonis Cortex Siccatus.

INFUSUM BUCHU**Infusion of Buchu**

Buchu Leaves, freshly broken	50 grammes
Distilled Water, boiling	1000 millilitres

Infuse in a covered vessel for fifteen minutes ; strain while hot.

*Dose.**Metric.*

30 to 60 mls.

Imperial.

1 to 2 fluid ounces.

INFUSUM CALUMBÆ**Infusion of Calumba**

Calumba Root, cut small	50 grammes
Distilled Water, cold	1000 millilitres

Infuse in a covered vessel for half an hour ; strain.

*Dose.**Metric.*

15 to 30 mils.

Imperial. $\frac{1}{2}$ to 1 fluid ounce.**INFUSUM CARYOPHYLLI****Infusion of Cloves**

Cloves, bruised	25 grammes
Distilled Water, boiling	1000 millilitres

Infuse in a covered vessel for fifteen minutes ; strain while hot.

*Dose.**Metric.*

15 to 30 mils.

Imperial. $\frac{1}{2}$ to 1 fluid ounce.**INFUSUM CASCARILLÆ****Infusion of Cascarilla**

Cascarilla, in No. 10 powder	50 grammes
Distilled Water, boiling	1000 millilitres

Infuse in a covered vessel for fifteen minutes ; strain while hot.

*Dose.**Metric.*

15 to 30 mils.

Imperial. $\frac{1}{2}$ to 1 fluid ounce.**INFUSUM CHIRATÆ****Infusion of Chiretta**

Chiretta, cut small	50 grammes
Distilled Water, boiling	1000 millilitres

Infuse in a covered vessel for fifteen minutes ; strain while hot.

Dose.

Metric.

15 to 30 mls.

Imperial.

$\frac{1}{2}$ to 1 fluid ounce.

INFUSUM CINCHONÆ ACIDUM

Acid Infusion of Cinchona

Red Cinchona Bark, in No. 40

powder	50·0 grammes
Aromatic Sulphuric Acid	12·5 millilitres
Distilled Water, boiling	1000·0 millilitres

Mix the Red Cinchona Bark with the Distilled Water in a covered vessel ; add the Aromatic Sulphuric Acid ; infuse for one hour ; strain while hot.

Dose.

Metric.

15 to 30 mls.

Imperial.

$\frac{1}{2}$ to 1 fluid ounce.

INFUSUM DIGITALIS

Infusion of Digitalis

Digitalis Leaves, in No. 20

powder	7 grammes
Distilled Water, boiling	1000 millilitres

Infuse in a covered vessel for fifteen minutes ; strain while hot.

Dose.

Metric.

7 to 15 mls.

Imperial.

2 to 4 fluid drachms.

INFUSUM ERGOTÆ**Infusion of Ergot**

Ergot, freshly crushed . . .	50 grammes
Distilled Water, boiling . . .	1000 millilitres

Infuse in a covered vessel for fifteen minutes ; strain while hot.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
30 to 60 mils.	1 to 2 fluid ounces.

INFUSUM GENTIANÆ COMPOSITUM**Compound Infusion of Gentian**

Gentian Root, thinly sliced . .	12.5 grammes
Dried Bitter-Orange Peel, cut small	12.5 grammes
Fresh Lemon Peel, cut small . .	25.0 grammes
Distilled Water, boiling	1000.0 millilitres

Infuse in a covered vessel for fifteen minutes ; strain while hot.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
15 to 30 mils.	$\frac{1}{2}$ to 1 fluid ounce.
See Appendix XII, page	, Limonis Cortex Siccatus.

INFUSUM KRAMERIÆ**Infusion of Krameria**

Synonym—Infusion of Rhatany

Krameria Root, bruised . . .	50 grammes
Distilled Water, boiling . . .	1000 millilitres

Infuse in a covered vessel for fifteen minutes ; strain while hot.

Dose.

Metric.

15 to 30 mls.

Imperial.

$\frac{1}{2}$ to 1 fluid ounce.

INFUSUM QUASSIÆ

Infusion of Quassia

Quassia Wood, rasped . . . 10 grammes
Distilled Water, cold . . . 1000 millilitres

Infuse in a covered vessel for fifteen minutes ; strain,

Dose.

Metric.

15 to 30 mls.

Imperial.

$\frac{1}{2}$ to 1 fluid ounce.

INFUSUM RHEI

Infusion of Rhubarb

Rhubarb, in thin slices . . . 50 grammes
Distilled Water, boiling . . . 1000 millilitres

Infuse in a covered vessel for fifteen minutes ; strain while hot.

Dose.

Metric.

15 to 30 mls.

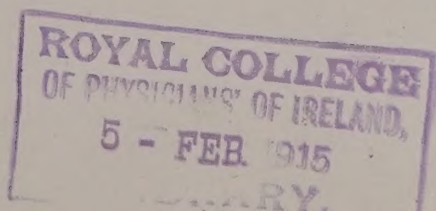
Imperial.

$\frac{1}{2}$ to 1 fluid ounce.

INFUSUM ROSÆ ACIDUM

Acid Infusion of Roses

Red-Rose Petals, dried and
broken . . . 25.0 grammes
Diluted Sulphuric Acid . . . 12.5 millilitres
Distilled Water, boiling . . . 1000.0 millilitres



Add the Diluted Sulphuric Acid to the Distilled Water; infuse the Red-Rose Petals in the mixture in a covered vessel for fifteen minutes ; strain while hot.

<i>Dose.</i>	
<i>Metric.</i>	<i>Imperial.</i>
15 to 30 mils.	$\frac{1}{2}$ to 1 fluid ounce.

INFUSUM SCOPARII

Infusion of Broom

Broom Tops, dried and bruised . . . 100 grammes
Distilled Water, boiling . . . 1000 millilitres

Infuse in a covered vessel for fifteen minutes ; strain while hot.

<i>Dose.</i>	
<i>Metric.</i>	<i>Imperial.</i>
30 to 60 mils.	1 to 2 fluid ounces.

INFUSUM SENEGÆ

Infusion of Senega

Senega Root, in No. 10 powder . . . 50 grammes
Distilled Water, boiling . . . 1000 millilitres

Infuse in a covered vessel for half an hour ; strain while hot.

<i>Dose.</i>	
<i>Metric.</i>	<i>Imperial.</i>
15 to 30 mils.	$\frac{1}{2}$ to 1 fluid ounce.

INFUSUM SENNÆ**Infusion of Senna**

Senna Leaves	100 grammes
Ginger, sliced	5 grammes
Distilled Water, boiling	1000 millilitres

Infuse in a covered vessel for fifteen minutes ; strain while hot.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
15 to 30 mls (repeated).	$\frac{1}{2}$ to 1 fluid ounce (repeated).
60 mls (single).	2 fluid ounces (single).

INFUSUM UVÆ URSI**Infusion of Bearberry**

Bearberry Leaves, bruised	50 grammes
Distilled Water, boiling	1000 millilitres

Infuse in a covered vessel for fifteen minutes ; strain while hot.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
15 to 30 mls.	$\frac{1}{2}$ to 1 fluid ounce.

INJECTIO APOMORPHINÆ HYPODERMICA**Hypodermic Injection of Apomorphine**

Apomorphine Hydrochloride	1 gramme
Diluted Hydrochloric Acid	1 millilitre
Distilled Water, recently boiled and cooled, sufficient to pro- duce	100 millilitres

Mix the Diluted Hydrochloric Acid with fifty millilitres of the Distilled Water ; dissolve the Apomorphine Hydrochloride in the mixture, and add sufficient of the Distilled Water to produce the required volume.

Dose, by hypodermic injection.

Metric.

3 to 6 decimils.

Imperial.

5 to 10 minims.

This Injection should be recently prepared. 100 millilitres contain 1 gramme of Apomorphine Hydrochloride ; 110 minims contain 1 grain.

*

INJECTIO COCAINÆ HYPODERMICA

Hypodermic Injection of Cocaine

Cocaine Hydrochloride	.	.	10·00 grammes
Salicylic Acid	.	.	0·15 gramme
Distilled Water	.	.	100·00 millilitres,
			or a sufficient quantity

Boil the Distilled Water ; add the Salicylic Acid ; dissolve the Cocaine Hydrochloride in the solution when cool ; add, if necessary, sufficient recently boiled and cooled Distilled Water to produce one hundred millilitres of the Injection.

Dose, by hypodermic injection.

Metric.

3 to 6 decimils.

Imperial.

5 to 10 minims.

This Injection contains 10 grammes of Cocaine Hydrochloride in 100 millilitres ; 110 minims contain 10 grains.

*

INJECTIO ERGOTÆ HYPODERMICA**Hypodermic Injection of Ergot**

Extract of Ergot	33 grammes
Phenol	1 gramme
Distilled Water, recently boiled and cooled, sufficient to pro- duce	100 millilitres

Dissolve.

*Dose, by hypodermic injection.**Metric.**Imperial.*

3 to 6 decimils.

5 to 10 minims.

This Injection should be recently prepared. 100 millilitres contain 33 grammes of Extract of Ergot; 110 minims contain 33 grains.

*

INJECTIO MORPHINÆ HYPODERMICA**Hypodermic Injection of Morphine**

Morphine Tartrate	2·5 grammes
Distilled Water, recently boiled and cooled, sufficient to pro- duce	100·0 millilitres

Dissolve.

*Dose, by hypodermic injection.**Metric.**Imperial.*

3 to 6 decimils.

5 to 10 minims.

This Injection is one-half the strength of the corresponding preparation of the British Pharmacopœia, 1898. It contains 2·5 grammes of Morphine Tartrate in 100 millilitres; 110 minims contains 2½ grains.

*

INJECTIO STRYCHNINÆ HYPODERMICA

Hypodermic Injection of Strychnine

Strychnine Hydrochloride . . . 0·5 gramme
 Distilled Water, recently boiled and
 cooled, sufficient to produce . 100·0 millilitres
 Dissolve.

Dose, by hypodermic injection.

<i>Metric.</i>	<i>Imperial.</i>
3 to 6 decimils.	5 to 10 minims.

This Injection contains 0·5 gramme of Strychnine Hydrochloride in 100 millilitres; 110 minims contain $\frac{1}{2}$ grain.

IODOFORMUM

Iodoform

Iodoform, CHI_3 , may be obtained by the action of iodine on ethylic alcohol in the presence of solution of potassium carbonate.

Characters and Tests.—Shining, lemon-yellow, small, hexagonal crystals, somewhat unctuous to the touch. Odour and taste persistent and disagreeable. Very slightly soluble in *water*; soluble in 100 parts of *alcohol* (90 per cent.), and in 8 parts of *ether*, the solutions being neutral to *litmus*; soluble also in *chloroform*, in *carbon disulphide*, in volatile oils and in fixed oils; sparingly soluble in *benzene*. When warmed with *alcoholic solution of potassium hydroxide*, the resulting solution, acidified with *nitric acid*, becomes brown, and, when cold, changes to blue on the addition of *mucilage of starch*. 10 millilitres of *water* with which 1 gramme of Iodoform has been shaken are colourless and not bitter (absence of soluble yellow colour-

ing matters and of picric acid), and yield no *reactions* for iodides. No appreciable ash.

Dose.

Metric.
3 to 20 centigrams.

Imperial.
 $\frac{1}{2}$ to 3 grains.

IODUM

Iodine

Iodine may be obtained from the ashes of seaweeds and from native iodides and iodates. It contains not less than 99 per cent. of pure iodine, I.

Characters and Tests.—In rhombic prisms or octahedrons of the trimetric system, of dark colour, and metallic lustre. Characteristic odour. Yields, when gently heated, a violet-coloured vapour. Very slightly soluble in *water*, more soluble in *alcohol* (90 per cent.); readily soluble in *ether*, and in *carbon disulphide*. *Mucilage of starch* colours the aqueous solution deep blue. Sublimes without appreciable residue, the first portion sublimed not including any slender colourless prisms emitting a pungent odour (absence of iodine cyanide). A solution of Iodine in *chloroform* is perfectly clear (absence of moisture). 0.5 gramme, dissolved in 50 millilitres of *water* containing 1 gramme of *potassium iodide*, requires for decoloration not less than 39 millilitres of *N/10 solution of sodium thiosulphate*.

IPECACUANHÆ RADIX

Ipecacuanha Root

Ipecacuanha Root is the dried root of *Psychotria Ipecacuanha*, *Stokes*.

Characters and Tests.—In somewhat tortuous pieces

seldom more than fifteen centimetres long or six millimetres thick ; from dark brick-red to very dark brown ; closely annulated externally, the annulations not taking the form of narrow ridges partially encircling the root (distinction from *Cartagena ipecacuanha*). Fracture short, the fractured surface exhibiting a thick greyish bark and small dense wood. Bark consisting of thin-walled parenchymatous cells, some containing slender raphides, but most filled with simple or compound starch grains, the simple seldom exceeding fifteen microns in length ; wood consisting chiefly of tracheids and containing no vessels or typical medullary rays. In the powdered Root, thin-walled parenchymatous tissue, abundant simple or compound starch grains, the single grains not exceeding 15 microns in diameter, acicular calcium oxalate crystals, fragments of brown cork, lignified tracheids and wood-parenchyma ; but not more than a very occasional vessel or strongly thickened sclerenchymatous cell. Slight odour ; taste bitter. Ash not more than 5 per cent. Yields not less than 2 per cent. of alkaloids when tested by the following process :—

Shake 7 grammes of the Root, in No. 60 powder, frequently during five minutes with 70 millilitres of a mixture of 1 volume of *chloroform* and 3 volumes of *ether* ; add 5 millilitres of *solution of ammonia* and shake frequently during one hour ; then add 5 millilitres of *water* or sufficient to make the powder agglomerate on violently shaking. Separate 50 millilitres of the clear liquid, and shake first with 10 millilitres of *N/10 solution of hydrochloric acid*, and then with three successive portions, each of 3 millilitres, of *water*. Mix the several aqueous solutions, make alkaline with *solution of ammonia*, and shake out first with 10 millilitres and then with three successive portions, each of 5 millilitres, of a mixture of 6 volumes of *ether* and 1 volume of *chloroform*. Mix the several ethereal solutions, evaporate, dry the residue at 80° and weigh. It weighs not less than 0.100 gramme.

Powdered *Ipecacuanha Root*, when used for official purposes other than the production of standardised pre-

parations, must be adjusted by the addition, if necessary, of powdered Milk Sugar to contain in 100 grammes when tested by the foregoing process 2 grammes of the alkaloids of Ipecacuanha Root. *Limit of error* 0.1 gramme in excess or defect.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
3 to 12 centigrams (expectorant).	$\frac{1}{2}$ to 2 grains (expectorant).
1 to 2 grammes (emetic).	15 to 30 grains (emetic).

IPOMŒÆ RADIX

Orizaba Jalap Root

Synonym—Mexican Scammony Root

Orizaba Jalap Root is the dried root of *Ipomœa orizabensis*, *Ledanois*.

Characters and Test.—In irregular, tough, or fibrous pieces of varying size and shape, but often in portions, three to five centimetres wide and two to four centimetres thick, of transverse slices of large roots. Externally greyish-black and wrinkled, internally greyish or brownish. From the transverse surface coarse fibres protrude in irregular concentric circles. Slight odour; taste faintly acrid. Yields to *alcohol* (90 per cent.) a resin which has the properties enumerated under ‘*Scammoniae Resina*.’

ISPAGHULA

Ispaghula

Ispaghula consists of the dried seeds of *Plantago ovata*, *Forsk.*

Characters.—Seeds boat-shaped, somewhat acute at one end, from two to three millimetres long and from one to one and a half millimetres wide; pale greyish-brown, with a darker elongated spot on the convex side; on the concave side the hilum covered with the remains of a thin white membrane. In *water* the testa swells, producing a viscous mucilage. No odour or taste.

Dose (in powder).

Metric.

3 to 10 grammes.

Imperial.

45 to 150 grains.

JALAPA

Jalap

Jalap consists of the dried tubercules of *Ipomœa Purga*, *Hayne*.

Characters and Tests.—Tubercules dark brown, irregularly oblong, napiform or fusiform, three to eight centimetres or more long, the larger being often incised. Hard, compact and heavy; externally wrinkled, and marked with small transverse scars; internally yellowish-grey to dingy brown. In transverse section irregular, dark, concentric lines; examined microscopically numerous compound starch grains, many of which are gelatinised, clustered crystals of calcium oxalate, and cells containing a resinous emulsion stained yellow by *N/10 solution of iodine*; in the wood, pitted vessels and tracheids. Characteristic odour; taste at first sweet but afterwards acrid and disagreeable. Ash not more than 6·5 per cent. Yields not less than 9 or more than 11 per cent. of resin having the properties of Jalap Resin, when assayed by the process described under '*Jalapæ Resina*.'

Dose (in powder).

Metric.

3 to 12 decigrams.

Imperial.

5 to 60 grains.

JALAPÆ RESINA**Jalap Resin**

Jalap Resin is a mixture of resins obtained from Jalap.

Exhaust coarsely powdered Jalap with Alcohol (90 per cent.). Recover most of the alcohol by distillation; pour the concentrated tincture thus obtained into eight times its volume of Distilled Water; allow the resin that separates to subside, wash with Distilled Water, and dry at a gentle heat.

Characters and Tests.—In dark-brown opaque fragments, translucent at the edges; brittle, breaking with a resinous fracture; readily reduced to a pale-brown powder. Characteristic odour; taste acrid. Readily soluble in *alcohol* (90 per cent.). When 1 gramme of the powdered Resin is triturated with 20 millilitres of *water* and filtered, the filtrate is almost colourless. A solution of 0.1 gramme in 10 millilitres of *solution of sodium hydroxide*, boiled for a few moments and cooled, when acidified with *hydrochloric acid*, may become opalescent but not immediately turbid (absence of certain other resins). Not more than 15 per cent. of the powdered Resin is soluble in *ether* (absence of scammony resin).

*Dose.**Metric.*

12 to 30 centigrams.

Imperial.

2 to 5 grains.

KALADANA**Kaladana**

Synonym—Pharbitis Seeds

Kaladana consists of the dried seeds of *Ipomœa hederacea*, *Jacq.*

Characters.—Seeds in the form of a segment of a sphere ; usually about five millimetres long, but sometimes much smaller ; nearly black. In transverse section, minute dark resin-cells in the plaited cotyledons. Slight odour ; taste acrid.

Dose (in powder).

Metric.
2 to 3 grammes.

Imperial.
30 to 45 grains.

KALADANÆ RESINA

Kaladana Resin

Synonym—Pharbitisin

Kaladana Resin is a mixture of resins obtained from Kaladana.

Exhaust coarsely powdered Kaladana with Alcohol (90 per cent.). Recover most of the alcohol by distillation ; pour the concentrated tincture thus obtained into eight times its volume of Distilled Water ; allow the resin that separates to subside, wash with Distilled Water, and dry at a gentle heat.

Characters and Tests.—In brownish opaque fragments, translucent at the edges ; brittle, breaking with a resinous fracture ; readily reduced to a grey powder. Somewhat disagreeable odour, especially when warmed ; taste sweetish, acrid. Readily soluble in *alcohol* (90 per cent.) ; almost insoluble in *benzene*, *ether*, *chloroform*, or *carbon disulphide*. When 1 gramme of the powdered Resin is triturated with 20 millilitres of *water* and filtered, the filtrate is almost colourless. A solution of 0·1 gramme in 10 millilitres of *solution of sodium hydroxide*, boiled for a few moments and cooled, when acidified with *hydrochloric acid*, may become opalescent but not immediately turbid (absence of certain other resins).

*Dose.**Metric.*

12 to 50 centigrams.

Imperial.

2 to 8 grains.

KAOLINUM**Kaolin**

Kaolin is a native aluminium silicate, powdered, and freed from gritty particles by elutriation.

Characters and Tests.—A soft whitish powder, insoluble in *water*, or in diluted acids. When the product of its fusion with alkalis is digested with *water*, the filtered solution acidified with *hydrochloric acid*, evaporated to dryness, and the residue digested with *diluted hydrochloric acid*, a residue of silica is obtained, and the acid solution yields the *reactions* characteristic of aluminium.

KAVÆ RHIZOMA**Kava Rhizome**

Kava Rhizome is the decorticated, dried, and divided rhizome of *Piper methysticum*, *Forst. fil.*

Characters.—In whitish or light brownish-grey irregularly cuboid or roughly wedge-shaped fragments from which the periderm has been sliced off; from one to five centimetres thick. In transverse section, usually exhibiting a central dense pith, surrounded by a distinct ring of narrow, radiating, vascular bundles separated by relatively broad, paler, medullary rays. Fracture starchy. Slight, agreeable odour; taste pungent and bitter.

KINO**Kino**

Kino is the juice obtained from incisions in the trunk of *Pterocarpus Marsupium*, *Roxb.*, heated to boiling and evapor-

ated to dryness. Known in commerce as East Indian, Malabar, or Cochin kino.

Characters and Tests.—In small, angular, glistening opaque, reddish-black, brittle fragments; transparent and ruby-red in thin laminae. Inodorous; taste very astringent. Almost entirely soluble in *alcohol* (90 per cent.), slowly and incompletely soluble in cold *water*, not less than 75 per cent., soluble in boiling *water*, the solutions being deep red in colour. Almost entirely insoluble in *ether*. A 5 per cent. aqueous solution yields a voluminous reddish precipitate with dilute mineral acids, and, when largely diluted with *water*, a greenish-black precipitate with *T.Sol. of ferric chloride*. Ash not more than 2.5 per cent.

Dose (in powder).

<i>Metric.</i>	<i>Imperial.</i>
3 to 12 decigrams.	5 to 20 grains.

KINO EUCALYPTI

Eucalyptus Kino

Synonyms—Eucalyptus Gum: Red Gum

Eucalyptus Kino is an exudation from the stem of various species of Eucalyptus. Imported from Australia.

Characters and Tests.—In very dark reddish-brown grains or small masses. Thin fragments transparent and ruby-red, or garnet-red. Inodorous; taste very astringent. Tough and adhering to the teeth when chewed. Not less than 80 per cent. soluble in *water*. Almost entirely soluble in *alcohol* (90 per cent.).

Dose (in powder).

<i>Metric.</i>	<i>Imperial.</i>
3 to 12 decigrams.	5 to 20 grains.

KRAMERIÆ RADIX**Krameria Root**

Synonym—Rhatany Root

Krameria Root is the dried root of *Krameria triandra*, *Ruiz and Pav.* (Peruvian Rhatany), and also of a species of *Krameria*, probably *Krameria argentea*, *Mart.* (*Pará Rhatany*).

Characters and Test.—Peruvian Rhatany is nearly cylindrical, slightly flexuous, reddish-brown; length variable; thickness not exceeding fifteen millimetres. Cork scaly; fracture splintery; wood yellow. In transverse section, bark bright reddish-brown and occupying about one-third of the radius of the section. *Pará Rhatany* is cylindrical, nearly straight, dark purplish-brown or almost black and marked with deep transverse cracks. Fracture short; wood pale reddish-brown. In transverse section, bark dark reddish-brown and occupying about one-half the radius of the section. Both varieties inodorous; taste of the bark astringent, of the wood scarcely perceptible. Ash not more than 4 per cent.

LAMELLÆ ATROPINÆ**Discs of Atropine**

Discs of Atropine are discs of Gelatin with Glycerin, each weighing about 1·3 milligrams (1/50 grain) and containing 0·013 milligram (1/5000 grain) of Atropine Sulphate.

Prepare as directed in the Appendix, employing 0·016 gramme of Atropine Sulphate and 8·8 grammes of *basis*.

THE HISTORY OF THE

REPUBLIC OF THE UNITED STATES

OF AMERICA

FROM 1776 TO 1876

By JAMES M. SMITH, LL.D.,
Professor of History in the University of
Michigan, and formerly Secretary of the
Michigan Historical Society.

Published by the
AMERICAN BOOK CONCERN,
100 NASSAU ST., N.Y.
1876.

THE HISTORY OF THE

REPUBLIC OF THE UNITED STATES

OF AMERICA
FROM 1776 TO 1876
By JAMES M. SMITH, LL.D.,
Professor of History in the University of
Michigan, and formerly Secretary of the
Michigan Historical Society.

LAMELLÆ COCAINÆ**Discs of Cocaine**

Discs of Cocaine are discs of Gelatin with Glycerin, each weighing about 3·5 milligrams (1/20 grain) and containing 1·3 milligrams (1/50 grain) of Cocaine Hydrochloride.

Prepare as directed in the Appendix, employing 1·65 grammes of Cocaine Hydrochloride and 15 grammes of *basis*.

LAMELLÆ HOMATROPINÆ**Discs of Homatropine**

Discs of Homatropine are discs of Gelatin with Glycerin, each weighing about 2·1 milligrams (1/32 grain) and containing 0·65 milligram (1/100 grain) of Homatropine Hydrobromide.

Prepare as directed in the Appendix, employing 0·82 gramme of Homatropine Hydrobromide and 10·1 grammes of *basis*.

LAMELLÆ PHYSOSTIGMINÆ**Discs of Physostigmine**

Synonym—Discs of Eserine

Discs of Physostigmine are discs of Gelatin with Glycerin, each weighing about 1·3 milligrams (1/50 grain) and containing 0·065 milligram (1/1000 grain) of Physostigmine Sulphate.

Prepare as directed in the Appendix, employing 0·082 gramme of Physostigmine Sulphate and 8·45 grammes of *basis*.

LAUROCERASI FOLIA**Cherry-Laurel Leaves**

Cherry-Laurel Leaves are the fresh leaves of *Prunus Laurocerasus*, *Linn.*

Characters.—Thick, coriaceous, on short, strong petioles, oblong or somewhat obovate, from twelve to eighteen centimetres long, tapering towards each end, recurved at the apex, distantly but sharply serrate and slightly revolute at the margins; dark green, smooth and shining above, much paler beneath; midrib prominent, with one or two glandular depressions on the under surface near its base. Inodorous, but emitting when bruised an odour resembling that of bitter almonds.

LIMONIS CORTEX**Lemon Peel**

Lemon Peel is the fresh outer part of the pericarp of the fruit of *Citrus Medica*, *Linn.*, var. β *Limonum*, *Hook. f.*

Characters.—Pale yellow and more or less rough on the outer surface; with only a small amount of the white spongy part of the pericarp on the inner surface; in transverse section numerous large oil-glands below the epidermis. Strong, characteristic and fragrant odour; taste warm, aromatic and bitter.

See Appendix XII, page , *Limonis Cortex Siccatus*.

LINI SEMINA**Linseed**

Linseed consists of the dried ripe seeds of *Linum usitatissimum*, *Linn.*

Characters.—Seeds small, brown, glossy, nearly flat; from about four to six millimetres long; ovate, somewhat obliquely pointed; surface glabrous and minutely pitted. Internally yellowish-white, with a narrow oily endosperm and two large oily cotyledons. Epidermal cells filled with mucilage which swells and dissolves in *water*. No odour; taste mucilaginous, oily.

LINI SEMINA CONTUSA

Crushed Linseed

Crushed Linseed is Linseed reduced to a coarse powder, It should be recently prepared.

Characters and Tests.—A coarse, brownish-yellow powder, with readily visible fragments of the brown seed-coats. Bland, not pungent or rancid, odour when mixed with warm *water*. Yields not less than 30 per cent. of oil when exhausted by *carbon disulphide*; the oil thus obtained answers to the tests described under ‘*Oleum Lini*’; the residual powder exhibits no starch grains when examined under the microscope. Ash not more than 5 per cent.

LINIMENTUM ACONITI

Liniment of Aconite

Liniment of Aconite contains in 100 millilitres 0·2 gramme of the ether-soluble alkaloids of Aconite Root.

Aconite Root, in No. 40 powder	500 grammes
Camphor	} of each a sufficient quantity
Alcohol (90 per cent.)	

Moisten the Aconite Root with part of the Alcohol, pack in a percolator, and percolate with more of the Alcohol until the Root is exhausted. Reserve the first seven hundred

and fifty millilitres of the percolate; evaporate the remainder to a syrup and add it to the reserved portion. Determine the weight of ether-soluble alkaloid in fifteen millilitres of the tincture thus obtained by the process described under 'Aconiti Radix.' Add to the remainder of the tincture sufficient of the Camphor and of the Alcohol to produce a Liniment of Aconite containing in each 100 millilitres 0·2 gramme of the ether-soluble alkaloids of Aconite Root and 3 grammes of Camphor.

Test.—Examined by the foregoing process Liniment of Aconite is found to contain in 100 millilitres 0·2 gramme of the ether-soluble alkaloids of Aconite Root. *Limit of error* 0·01 gramme in excess or defect.

LINIMENTUM AMMONIÆ

Liniment of Ammonia

Solution of Ammonia	250 millilitres
Almond Oil	250 millilitres
Olive Oil	500 millilitres

Shake together. σ

See Appendix XII, page . . . , Oleum Olivæ.

LINIMENTUM BELLADONNÆ

Liniment of Belladonna

Liquid Extract of Belladonna	500 millilitres
Camphor	50 grammes
Distilled Water	100 millilitres
Alcohol (90 per cent.) sufficient to produce	1000 millilitres

Dissolve the Camphor in three hundred millilitres of the Alcohol; add the Liquid Extract of Belladonna, the Distilled Water, and sufficient of the Alcohol to produce the required volume. Set aside for twenty-four hours; filter.

LINIMENTUM CALCIS**Liniment of Lime**

Solution of Lime	500 millilitres
Olive Oil	500 millilitres

Shake together.

See Appendix XII, page . . . , Oleum Olivæ.

LINIMENTUM CAMPHORÆ**Liniment of Camphor**

Synonym—Camphorated Oil

Camphor, in flowers	200 grammes
Olive Oil	800 grammes

Dissolve the Camphor in the Olive Oil in a closed vessel.

See Appendix XII, page . . . , Oleum Olivæ.

LINIMENTUM CAMPHORÆ AMMONIATUM**Ammoniated Liniment of Camphor**

Synonym—Compound Liniment of Camphor

Camphor	125 grammes
Oil of Lavender	5 millilitres
Strong Solution of Ammonia	250 millilitres
Alcohol (90 per cent.) sufficient to produce	1000 millilitres

Dissolve the Camphor and Oil of Lavender in six hundred millilitres of the Alcohol; add the Strong Solution of Ammonia gradually, shaking frequently; finally add sufficient of the Alcohol to produce the required volume.

LINIMENTUM CHLOROFORMI**Liniment of Chloroform**

Chloroform	500 millilitres
Liniment of Camphor	500 millilitres

Mix.

LINIMENTUM CROTONIS**Liniment of Croton Oil**

Croton Oil	120 millilitres
Oil of Cajuput	440 millilitres
Alcohol (90 per cent.)	440 millilitres

Mix.

LINIMENTUM HYDRARGYRI**Liniment of Mercury**

Ointment of Mercury	50 grammes
Solution of Ammonia	40 millilitres
Liniment of Camphor	80 millilitres

Shake the Solution of Ammonia with the Liniment of Camphor, and triturate the Ointment of Mercury with the mixture.

This Liniment contains approximately three-fifths of the proportion of Mercury contained in the corresponding preparation of the British Pharmacopœia, 1898.

*

LINIMENTUM OPII**Liniment of Opium**

Tincture of Opium	500 millilitres
Liniment of Soap	500 millilitres

Mix ; set aside for a few days ; filter.

LINIMENTUM POTASSII IODIDI CUM SAPONE

Liniment of Potassium Iodide with Soap

Curd Soap, recently prepared

and in shavings	40.0 grammes
Potassium Iodide	30.0 grammes
Glycerin	20.0 millilitres
Oil of Lemon	2.5 millilitres
Distilled Water	200.0 millilitres

Mix the Curd Soap with the Distilled Water and Glycerin in a tared porcelain dish on a water-bath; when the Soap is dissolved make up to the original weight with Distilled Water; pour the liquid into a mortar containing the Potassium Iodide, previously powdered; mix briskly by trituration; continue the trituration until the mixture is cold; set aside for an hour; then add the Oil of Lemon, and again triturate the gelatinous product.

LINIMENTUM SAPONIS

Liniment of Soap

Soft Soap	80 grammes
Camphor	40 grammes
Oil of Rosemary	15 millilitres
Distilled Water	170 millilitres
Alcohol (90 per cent.) sufficient to produce	1000 millilitres

Dissolve the Soap, Camphor and Oil of Rosemary in six hundred millilitres of the Alcohol; add the Distilled Water and sufficient of the Alcohol to produce the required volume; set aside for a week, and filter.

LINIMENTUM SINAPIS**Liniment of Mustard**

Volatile Oil of Mustard	35 millilitres
Camphor	55 grammes
Castor Oil	125 millilitres
Alcohol (90 per cent.) sufficient to produce	1000 millilitres

Dissolve.

LINIMENTUM TEREBINTHINÆ**Liniment of Turpentine**

Soft Soap	75 grammes
Camphor	50 grammes
Oil of Turpentine	650 millilitres
Distilled Water sufficient to pro- duce	1000 millilitres

Mix the Soft Soap with one hundred millilitres of the Distilled Water ; dissolve the Camphor in the Oil of Turpentine ; gradually add the latter solution to the former, triturating until the mixture becomes a thick creamy emulsion ; add sufficient Distilled Water to produce the required volume.

LINIMENTUM TEREBINTHINÆ ACETICUM**Liniment of Turpentine and Acetic Acid**

Glacial Acetic Acid	110 millilitres
Liniment of Camphor	445 millilitres
Oil of Turpentine sufficient to produce	1000 millilitres

Mix.

LIQUOR ACIDI CHROMICI**Solution of Chromic Acid**

Chromic Anhydride 25 grammes
 Distilled Water sufficient to produce 100 millilitres
 Dissolve.

LIQUOR ADRENALINI HYDROCHLORICUS**Hydrochloric Solution of Adrenalin**

Adrenalin 1 gramme
 Chloroform 5 millilitres
 Sodium Chloride 9 grammes
 Diluted Hydrochloric Acid . . . 3 millilitres
 Distilled Water, recently boiled
 and cooled, sufficient to pro-
 duce 1000 millilitres

Dissolve the Chloroform and the Sodium Chloride in nine hundred millilitres of the Distilled Water, add the Diluted Hydrochloric Acid, dissolve the Adrenalin in the mixture, and add sufficient Distilled Water to produce the required volume. Preserve the Solution in amber glass bottles.

Dose.

Metric.
 6 to 18 decimils.

Imperial.
 10 to 30 minims.

LIQUOR AMMONIÆ**Solution of Ammonia**

Solution of Ammonia is an aqueous solution containing 10 per cent. by weight of ammonia, NH_3 .

Strong Solution of Ammonia . . . 500 millilitres
 Distilled Water 1000 millilitres

Mix.

Characters and Tests.—Specific gravity 0·959. 3 grammes require for neutralisation 17·6 millilitres of *N/1 solution of sulphuric acid*. It responds in other respects to the characters and tests described under ‘*Liquor Ammonię Fortis*.’

LIQUOR AMMONIÆ FORTIS

Strong Solution of Ammonia

Strong Solution of Ammonia is an aqueous solution containing 32·5 per cent. by weight of ammonia, NH_3 . It may be obtained by heating a mixture of ammonium chloride and slaked lime, and passing the resulting ammonia into distilled water.

Characters and Tests.—A colourless liquid, with a characteristic, very pungent odour. Strongly alkaline. Specific gravity 0·888. 1 gramme requires for neutralisation 19·1 millilitres of *N/1 solution of sulphuric acid*. When mixed with an equal volume of *water* and a slight excess of *sulphuric acid* no colour or odour is developed (absence of tarry matters). Yields no characteristic *reactions* for aluminium, zinc, calcium, magnesium, potassium, sodium, carbonates, sulphates, or sulphides, and only the slightest *reactions* for chlorides. 0·5 millilitre of *solution of sodium sulphide* added to 50 millilitres of Strong Solution of Ammonia contained in a Nessler glass produces no change of colour (absence of copper, iron and lead). *Arsenic limit* 0·5 part per million. Leaves no appreciable residue on evaporation.

LIQUOR AMMONII ACETATIS

Solution of Ammonium Acetate

Acetic Acid		162·5 millilitres
Ammonium Carbonate		50·0 grammes,
		or a sufficient quantity
Distilled Water sufficient to pro-		
duce		1000·0 millilitres

Mix the Acetic Acid with five hundred millilitres of the Distilled Water; neutralise with Ammonium Carbonate; add sufficient Distilled Water to produce the required volume.

Tests.—Specific gravity 1·016. Mixed with an equal volume of a saturated aqueous solution of *hydrogen sulphide* not more than the slightest darkening in colour results (limit of heavy metals).

<i>Dose.</i>	
<i>Metric.</i>	<i>Imperial.</i>
8 to 24 mls.	2 to 6 fluid drachms.

Solution of Ammonium Acetate should be preserved in a vessel free from lead.

LIQUOR AMMONII CITRATIS

Solution of Ammonium Citrate

Citric Acid	125·0 grammes
Ammonium Carbonate	87·5 grammes,
	or a sufficient quantity
Distilled Water sufficient to produce	1000·0 millilitres

Dissolve the Citric Acid in five times its weight of Distilled Water; neutralise with Ammonium Carbonate; add sufficient Distilled Water to produce the required volume.

Tests.—Specific gravity 1·057. Mixed with an equal volume of a saturated aqueous solution of *hydrogen sulphide* not more than the slightest darkening in colour results (limit of heavy metals).

<i>Dose.</i>	
<i>Metric.</i>	<i>Imperial.</i>
8 to 24 mls.	2 to 6 fluid drachms.

Solution of Ammonium Citrate should be preserved in a vessel free from lead.

LIQUOR ARSENICALIS

Arsenical Solution

Synonym—Fowler's Solution

Arsenious Anhydride, in powder .	10 grammes
Potassium Carbonate	10 grammes
Compound Tincture of Lavender .	30 millilitres
Distilled Water sufficient to produce	1000 millilitres

Heat the Arsenious Anhydride and the Potassium Carbonate with five hundred millilitres of Distilled Water in a thousand millilitre flask until a clear solution is obtained; cool; add the Compound Tincture of Lavender and sufficient Distilled Water to produce the required volume.

Characters and Tests.—A reddish liquid, alkaline to *litmus* and having the odour of lavender. 25 millilitres, neutralised with *hydrochloric acid*, discharge the colour of 50·4 millilitres of *N/10 solution of iodine*, the presence of a slight excess of *sodium bicarbonate* being maintained throughout the operation.

*Dose.**Metric.*

12 to 50 centimils.

Imperial.

2 to 8 minims.

This Solution contains 1 gramme of Arsenious Anhydride in 100 millilitres; 110 minims contain 1 grain.

LIQUOR ARSENICI HYDROCHLORICUS

Hydrochloric Solution of Arsenic

Arsenious Anhydride, in powder .	10 grammes
Hydrochloric Acid	12 millilitres
Distilled Water sufficient to produce	1000 millilitres

Heat the Arsenious Anhydride and the Hydrochloric Acid with five hundred millilitres of Distilled Water in a thousand millilitre flask until a clear solution is obtained; cool; add sufficient Distilled Water to produce the required volume.

Characters and Tests.—A colourless liquid; acid to *litmus*. 25 millilitres diluted with *water* discharge the colour of 50·4 millilitres of *N/10 solution of iodine*, the presence of a slight excess of *sodium bicarbonate* being maintained throughout the operation.

Dose.

Metric.
12 to 50 centimils.

Imperial.
2 to 8 minims.

This Solution contains 1 gramme of Arsenious Anhydride in 100 millilitres; 110 minims contain 1 grain.

LIQUOR ARSENII ET HYDRARGYRI IODIDI

Solution of Arsenious and Mercuric Iodides

Synonym—Donovan's Solution

Arsenious Iodide	10 grammes
Red Mercuric Iodide	10 grammes
Distilled Water sufficient to produce	1000 millilitres

Triturate the Arsenious Iodide and Red Mercuric Iodide with two hundred and fifty millilitres of the Distilled Water until dissolved; filter; wash the filter with sufficient Distilled Water to produce the required volume.

Dose.

Metric.
3 to 12 decimils.

Imperial.
5 to 20 minims.

This Solution contains the equivalent of 1 gramme of Arsenious Iodide and 1 gramme of Red Mercuric Iodide in 100 millilitres; 110 minims contain 1 grain of each salt.

LIQUOR ATROPINÆ SULPHATIS**Solution of Atropine Sulphate**

Atropine Sulphate 1 gramme
 Distilled Water, recently boiled
 and cooled, sufficient to pro-
 duce 100 millilitres

Dissolve.

Dose.

Metric.

3 to 6 centimils.

Imperial.

$\frac{1}{2}$ to 1 minim.

This Solution should be freshly prepared. 100 millilitres contain 1 gramme of Atropine Sulphate; 110 minims contain 1 grain.

LIQUOR BISMUTHI ET AMMONII CITRATIS**Solution of Bismuth and Ammonium Citrate**

Bismuth Oxynitrate 70 grammes
 Citric Acid 52 grammes
 Solution of Ammonia } of each a sufficient quantity
 Distilled Water }

Powder the Citric Acid and mix it in a mortar with the Bismuth Oxynitrate and twenty millilitres of Distilled Water. Allow the mixture to stand, with occasional stirring, for half an hour, or until a small portion is completely soluble in Solution of Ammonia. Transfer to a beaker, using four hundred millilitres of Distilled Water to rinse the mortar. Allow the precipitate to settle, decant the clear liquid, and wash with three successive quantities of four hundred millilitres of Distilled Water. Add to the moist precipitate just sufficient Solution of Ammonia to dissolve it, and then sufficient Distilled Water to produce one thousand millilitres.

Characters and Tests.—A colourless liquid, freely miscible with water; taste somewhat metallic; slightly alkaline to *litmus*. Evolves ammonia when heated with solution of sodium hydroxide. 10 millilitres, evaporated to dryness and the residue ignited, yield not less than 0.5 gramme of bismuth oxide.

Dose.

Metric.
2 to 4 mls.

Imperial.
 $\frac{1}{2}$ to 1 fluid drachm.

LIQUOR CALCIS

Solution of Lime

Synonym—Lime Water

Calcium Hydroxide	50 grammes
Distilled Water	a sufficient quantity

Wash the Calcium Hydroxide with Distilled Water until free from chlorides; then shake it with five thousand millilitres of Distilled Water in a stoppered green glass bottle for two or three minutes; set aside until clear. The clear Solution may be drawn off with a siphon as required for use, and should then be transferred to a green glass bottle.

Tests.—24 millilitres require for neutralisation 10 millilitres of *N/10* solution of sulphuric acid. Yields no characteristic reactions for lead or chlorides.

Dose.

Metric.
30 to 120 mls.

Imperial.
1 to 4 fluid ounces.

This Solution contains the equivalent of rather more than 0.1 gramme of Lime, CaO , in 100 millilitres; 110 minims contain about 0.1 grain.

LIQUOR CALCIS CHLORINATÆ**Solution of Chlorinated Lime**

Chlorinated Lime	100 grammes
Distilled Water	1000 millilitres

Mix ; transfer the mixture to a stoppered bottle ; set aside for three hours, shaking occasionally ; filter through calico. Preserve the filtrate in a stoppered bottle in a cool dark place.

Test.—2 millilitres mixed with 1 gramme of *potassium iodide* dissolved in *water*, when acidified with 2 millilitres of *hydrochloric acid*, give a brownish-red solution which requires for the discharge of its colour not less than 11·7 millilitres of *N/10 solution of sodium thiosulphate*, *mucilage of starch* being used as indicator, corresponding to not less than 2 per cent. of available chlorine.

This Solution yields, when fresh, about 3 per cent. of available chlorine.

LIQUOR CALCIS SACCHARATUS**Saccharated Solution of Lime**

Calcium Hydroxide	50 grammes
Refined Sugar, in powder	100 grammes
Distilled Water	1000 millilitres

Mix the Calcium Hydroxide with a solution of the Refined Sugar in the Distilled Water. Set aside in a stoppered green glass bottle for a few hours, shaking occasionally ; separate the clear Solution with a siphon, avoiding unnecessary exposure to air.

Tests.—Specific gravity 1·055. 20 millilitres require for neutralisation 13·2 millilitres of *N/1 solution of sulphuric acid*. Yields no characteristic reactions for lead.

*Dose.**Metric.*

1 to 4 mils.

Imperial.

15 to 60 minims.

This Solution contains the equivalent of nearly 2 grammes of Lime, CaO, in 100 millilitres ; 110 minims contain nearly 2 grains.

LIQUOR CRESOLIS SAPONATUS

Solution of Cresol with Soap

= *Lysol.**Synonym*—Compound Solution of Cresol

Cresol	500 grammes
Castor Oil	350 grammes
Potassium Hydroxide	80 grammes
Distilled Water sufficient to produce	1000 grammes

Mix the Cresol with the Castor Oil and heat to 80°. Dissolve the Potassium Hydroxide in seventy grammes of the Distilled Water. Mix the two solutions and heat the mixture until one volume of it forms a clear liquid with ten volumes of Distilled Water. Cool, and add sufficient Distilled Water to produce the required weight.

LIQUOR EPISPASTICUS

Blistering Liquid

Cantharidin	4 grammes
Castor Oil	25 millilitres
Resin	12 grammes
Acetone sufficient to produce	1000 millilitres

Dissolve.

This Blistering Liquid contains approximately the same proportion of Cantharidin as the corresponding preparation of the British Pharmacopœia, 1898.

LIQUOR CHOLIC SATONATUS

Decoction of Choleberry Root

Choleberry Root	1 lb.
Water	10 lb.
Boil for 2 hours	
Strain off	
Add	
Sugar	1 lb.

Take of the Choleberry Root, sliced, 1 lb. Water 10 lb. Boil for 2 hours, strain off, and add 1 lb. of Sugar.

LIQUOR ERIGASTICUS

Decoction of Erigeron

Erigeron	1 lb.
Water	10 lb.
Boil for 2 hours	
Strain off	
Add	
Sugar	1 lb.

Take of the Erigeron, sliced, 1 lb. Water 10 lb. Boil for 2 hours, strain off, and add 1 lb. of Sugar.

LIQUOR ETHYL NITRITIS**Solution of Ethyl Nitrite**

Solution of Ethyl Nitrite contains not less than 2·5 or more than 3 per cent. by weight of ethyl nitrite in a mixture of ninety-five parts by volume of Absolute Alcohol with five parts by volume of Glycerin. The ethyl nitrite may be obtained by the interaction of alcohol (90 per cent.), sodium nitrite, and diluted sulphuric acid, at a low temperature. Solution of Ethyl Nitrite should be stored in small bottles.

Characters and Tests.—A nearly colourless transparent liquid, of characteristic apple-like odour and taste. Specific gravity 0·823 to 0·826. When poured on an acidified strong solution of *ferrous sulphate* contained in a test-tube, a deep olive-brown coloration is produced at the surface of contact of the two liquids. Does not effervesce when shaken with *sodium bicarbonate* (absence of acid). 10 millilitres mixed with 5 millilitres of *N/1 solution of sodium hydroxide* and 5 millilitres of *water*, do not assume a yellow colour (absence of acetaldehyde). 1 volume, shaken briskly at intervals during five minutes in a brine-charged nitrometer with 1 volume of *solution of potassium iodide* and 1 volume of *diluted sulphuric acid*, yields, at 15·5° and normal pressure, not less than 6·5 or more than 7·8 volumes of nitric oxide gas.

*Dose.**Metric.*

1 to 4 mls.

Imperial.

15 to 60 minims.

LIQUOR FERRI PERCHLORIDI**Solution of Ferric Chloride**

Strong Solution of Ferric

Chloride 250 millilitres

Distilled Water sufficient to produce . . 1000 millilitres

Mix.

LIQUOR ETHERIS

by J. H. H. H. H.

The first part of the work is devoted to a general survey of the literature on the subject of ether. The author discusses the various methods of preparing ether, and the properties of the different varieties of ether. He also discusses the uses of ether in medicine and in the arts.

The second part of the work is devoted to a detailed discussion of the properties of ether. The author discusses the physical and chemical properties of ether, and the various methods of determining these properties. He also discusses the uses of ether in the arts and in the laboratory.

LIQUOR ETHERIS

by J. H. H. H. H.

The third part of the work is devoted to a detailed discussion of the properties of ether. The author discusses the physical and chemical properties of ether, and the various methods of determining these properties. He also discusses the uses of ether in the arts and in the laboratory.

	<i>Metric.</i>	<i>Dose.</i>	<i>Imperial.</i>
	3 to 10 decimils.		5 to 15 minims.

LIQUOR FERRI PERCHLORIDI FORTIS

Strong Solution of Ferric Chloride

Iron	70 grammes
Hydrochloric Acid	410 millilitres
Nitric Acid	30 millilitres
Distilled Water	a sufficient quantity

Place the Iron in a flask ; add a mixture of two hundred and fifty millilitres of Hydrochloric Acid and one hundred and forty millilitres of Distilled Water ; expose to a moderate temperature until effervescence ceases ; then boil ; filter from undissolved Iron ; rinse the flask and contents with a little Distilled Water ; pour the rinsings over the filter ; add to the filtrate one hundred and forty millilitres of Hydrochloric Acid ; mix ; pour the solution in a slow continuous stream into the Nitric Acid, chemical action being promoted if necessary by gently warming ; evaporate the product until no more nitrous fumes escape and a precipitate begins to form ; add twenty millilitres of Hydrochloric Acid, and sufficient Distilled Water to produce three hundred and fifty millilitres.

Characters and Tests.—An orange-brown solution with a strong styptic taste. Miscible with *water* and with *alcohol* (90 per cent.) in all proportions. Specific gravity about 1.49. Yields the *reactions* characteristic of ferric salts and of chlorides. Yields no characteristic *reactions* for lead, copper, zinc, calcium, sodium, potassium, ammonium, or ferrous salts. On adding a clear crystal of *ferrous sulphate* to a cooled mixture of equal volumes of *sulphuric acid* and of the Strong Solution diluted with nine times its volume of *water*, the crystal

does not become brown, nor does a brownish-black colour develop around it (limit of nitrates). *Arsenic limit* 10 parts per million. 5 millilitres diluted with 80 millilitres of *water* give, upon the addition of an excess of *solution of ammonia*, a reddish-brown precipitate, which, when well washed and incinerated, weighs 1.6 grammes.

This Solution contains 22.5 grammes of Iron in 100 millilitres; 110 minims contain 22½ grains.



LIQUOR FERRI PERSULPHATIS

Solution of Ferric Sulphate

Ferrous Sulphate	400.0 grammes
Sulphuric Acid	37.5 millilitres
Nitric Acid	37.5 millilitres
Distilled Water	a sufficient quantity

Add the Sulphuric Acid to five hundred millilitres of the Distilled Water; dissolve the Ferrous Sulphate in the mixture with the aid of heat; mix the Nitric Acid with one hundred millilitres of the Distilled Water; add to this diluted acid, warmed, the solution of Ferrous Sulphate; concentrate by boiling, until, by the sudden disengagement of ruddy vapours, the liquid ceases to be black and acquires a red colour. If any ferrous salt remain in the solution, add a few drops of Nitric Acid, and boil again. When the solution is cold, add, if necessary, sufficient Distilled Water to produce five hundred and fifty millilitres.

Characters and Tests.—A dark-red solution. Inodorous; very astringent. Miscible in all proportions with *alcohol* and *water*. Specific gravity about 1.441. Yields the *reactions* characteristic of ferric salts and of sulphates. Yields no characteristic *reactions* for ferrous salts. *Arsenic limit* 5 parts per million. 5 millilitres diluted with 80 millilitres of *water* give, upon the addition of excess of *solution of ammonia*, a precipitate which, when well washed and incinerated, weighs 1.04 grammes.

LIQUOR FORMALDEHYDI

Solution of Formaldehyde

Solution of Formaldehyde is an aqueous solution containing in 100 millilitres not less than 36 and not more than 38 grammes of formaldehyde, CH_2O . Formaldehyde may be obtained by the limited oxidation of methyl alcohol.

Characters and Tests.—A colourless liquid with a characteristic, pungent odour. Neutral or slightly acid to *litmus*. Miscible with *water* and with *alcohol* (90 per cent.) in all proportions. Caustic when applied to the skin. Specific gravity 1·079 to 1·081. Affords, when evaporated to dryness, a whitish, amorphous residue which leaves no appreciable ash on incineration. Yields with *solution of silver ammonio-nitrate* a precipitate of metallic silver. On the addition of 2 drops to 5 millilitres of *sulphuric acid* in which a little *salicylic acid* has been previously dissolved a deep red coloration is produced. When 1 millilitre is mixed with 10 millilitres of *N/10 solution of iodine*, the mixture nearly decolorised with *solution of sodium hydroxide* and warmed, no yellow, crystalline precipitate is produced (absence of acetone). Diluted with four times its volume of *water* it yields no characteristic *reactions* for iron, copper, lead, calcium, chlorides or sulphates. Contains in 100 millilitres not less than 36 and not more than 38 grammes of formaldehyde, CH_2O , as determined by the following process:—

To 50 millilitres of *N/1 solution of sodium hydroxide* add 3 millilitres of Solution of Formaldehyde and 50 millilitres of *solution of hydrogen peroxide* and warm on a water-bath; similarly mix 50 millilitres of *N/1 solution of sodium hydroxide* with 50 millilitres of *solution of hydrogen peroxide* and warm on a water-bath. When the reactions are complete and all effervescence has ceased, add a few drops of *solution of phenolphthalein* to each mixture and titrate with *N/1 solution of sulphuric acid*. The difference between the two titrations is not less than 36 and not more than 38 millilitres.

LABOR FÜR ANATOMIE

Lehrstuhl für Anatomie

Die Anatomie ist die Lehre vom Aufbau des Körpers. Sie ist die Grundlage für das Verständnis der Funktion des Körpers. Die Anatomie ist eine wichtige Wissenschaft, die in der Medizin, Biologie und anderen Bereichen Anwendung findet.

Die Anatomie ist eine wichtige Wissenschaft, die in der Medizin, Biologie und anderen Bereichen Anwendung findet. Sie ist die Grundlage für das Verständnis der Funktion des Körpers. Die Anatomie ist eine wichtige Wissenschaft, die in der Medizin, Biologie und anderen Bereichen Anwendung findet.

Die Anatomie ist eine wichtige Wissenschaft, die in der Medizin, Biologie und anderen Bereichen Anwendung findet. Sie ist die Grundlage für das Verständnis der Funktion des Körpers. Die Anatomie ist eine wichtige Wissenschaft, die in der Medizin, Biologie und anderen Bereichen Anwendung findet.

Die Anatomie ist eine wichtige Wissenschaft, die in der Medizin, Biologie und anderen Bereichen Anwendung findet. Sie ist die Grundlage für das Verständnis der Funktion des Körpers. Die Anatomie ist eine wichtige Wissenschaft, die in der Medizin, Biologie und anderen Bereichen Anwendung findet.

Die Anatomie ist eine wichtige Wissenschaft, die in der Medizin, Biologie und anderen Bereichen Anwendung findet. Sie ist die Grundlage für das Verständnis der Funktion des Körpers. Die Anatomie ist eine wichtige Wissenschaft, die in der Medizin, Biologie und anderen Bereichen Anwendung findet.

Die Anatomie ist eine wichtige Wissenschaft, die in der Medizin, Biologie und anderen Bereichen Anwendung findet. Sie ist die Grundlage für das Verständnis der Funktion des Körpers. Die Anatomie ist eine wichtige Wissenschaft, die in der Medizin, Biologie und anderen Bereichen Anwendung findet.

LIQUOR FORMALDEHYDI SAPONATUS**Solution of Formaldehyde with Soap**

Soft Soap	400 grammes
Alcohol (90 per cent.)	300 millilitres
Solution of Formaldehyde	200 millilitres
Distilled Water sufficient to produce	1000 millilitres

Dissolve the Soft Soap in the Alcohol; add the Solution of Formaldehyde and sufficient Distilled Water to produce the required volume.

LIQUOR HAMAMELIDIS**Solution of Hamamelis**

Fresh Hamamelis Leaves	1000 grammes
Distilled Water	2000 millilitres
Alcohol (90 per cent.)	200 millilitres

Macerate for twenty-four hours; then distil one half.

LIQUOR HYDRARGYRI NITRATIS ACIDUS**Acid Solution of Mercuric Nitrate**

Mercury	120 grammes
Nitric Acid	150 millilitres
Distilled Water	45 millilitres

Mix the Nitric Acid with the Distilled Water in a tared flask; dissolve the Mercury in the mixture without the application of heat; then boil gently until the Solution weighs three hundred and sixty grammes. Preserve it in a stoppered bottle not exposed to the light.

Tests.—Specific gravity about 2·0. Yields no characteristic reactions for mercurous salts.

TIGOR FORMALINIZED SPECIMENS

Outline of Examination

1. General appearance of the specimen.
2. Color of the specimen.
3. Size of the specimen.
4. Shape of the specimen.
5. Location of the specimen.

6. Condition of the specimen.
7. History of the specimen.
8. Notes on the specimen.

TIGOR FORMALINIZED SPECIMENS

Outline of Examination

1. General appearance of the specimen.
2. Color of the specimen.
3. Size of the specimen.
4. Shape of the specimen.
5. Location of the specimen.

TIGOR FORMALINIZED SPECIMENS

Outline of Examination

1. General appearance of the specimen.
2. Color of the specimen.
3. Size of the specimen.
4. Shape of the specimen.
5. Location of the specimen.
6. Condition of the specimen.
7. History of the specimen.
8. Notes on the specimen.

LIQUOR HYDRARGYRI PERCHLORIDI

Solution of Mercuric Chloride

Mercuric Chloride 1 gramme
 Distilled Water sufficient to produce 1000 millilitres

Dissolve.

Dose.

Metric.
 2 to 4 mils.

Imperial.
 $\frac{1}{2}$ to 1 fluid drachm.

This Solution should be kept protected from light. 100 millilitres contain 0.1 gramme of Mercuric Chloride; 110 minims contain 0.1 grain.

*

LIQUOR HYDROGENII PEROXIDI

Solution of Hydrogen Peroxide

Solution of Hydrogen Peroxide is an aqueous solution of hydrogen peroxide, H_2O_2 , prepared by the interaction of water, barium peroxide, and a dilute mineral acid, at a temperature below 10° .

Characters and Tests.—A colourless and odourless liquid. Taste slightly acid. Decomposed by heat into water and oxygen. On adding a few drops to 10 millilitres of water mixed with a drop of *solution of potassium chromate*, 10 drops of *diluted sulphuric acid*, and 2 millilitres of *ether*, a blue layer appears between the ethereal and aqueous liquids, and after shaking, the *ether* also becomes blue. 2 millilitres vigorously shaken in a brine-charged nitrometer with 4 millilitres of *solution of copper ammonio-sulphate* liberate, at 15.5° and normal pressure, not less than 18 and not more than 22 millilitres of oxygen, corresponding to about 10 volumes of available oxygen in 1 millilitre of the Solution. 25 millilitres require for

$\frac{d}{dt} \left(\frac{1}{2} m v^2 \right) = \frac{d}{dt} \left(\frac{1}{2} m \dot{x}^2 + \frac{1}{2} m \dot{y}^2 + \frac{1}{2} m \dot{z}^2 \right)$

neutralisation not more than 2·5 millilitres of *N/10* solution of sodium hydroxide, methyl orange being used as indicator (limit of acidity). Yields no characteristic reactions for barium. Evaporated to dryness on a water-bath, not more than 1 per cent. of solid residue remains.

Dose.

Metric.
2 to 8 mils.

Imperial.
 $\frac{1}{2}$ to 2 fluid drachms.

LIQUOR MAGNESII BICARBONATIS

Solution of Magnesium Bicarbonate

Synonym—Fluid Magnesia

Magnesium Sulphate	40 grammes
Sodium Carbonate	50 grammes
Distilled Water	a sufficient quantity

Dissolve the two salts separately, each in two hundred millilitres of the Distilled Water; heat the solution of Magnesium Sulphate to the boiling point; add to it the solution of Sodium Carbonate; boil until carbon dioxide ceases to be evolved; collect the precipitate on a calico filter; wash it with Distilled Water until the filtrate is free from sulphate. Mix the washed precipitate with four hundred millilitres of Distilled Water; place the mixture in a suitable apparatus; force into it pure washed carbon dioxide; let the mixture remain in contact with excess of carbon dioxide, retained under a pressure of about three atmospheres, for twenty-four hours or longer; decant the solution, into which again pass carbon dioxide. Keep the Solution in securely closed bottles.

Characters and Tests.—Effervesces slightly, or not at all, when the containing vessel is first opened. Yields no

characteristic *reaction* for sulphates. *Lead limit* 0·5 part per million. *Arsenic limit* 0·2 part per million. 20 millilitres evaporated to dryness afford a white residue, which after calcination weighs not less than 0·16 and not more than 0·19 gramme. This residue is insoluble in *water*, and when dissolved in a dilute acid yields the *reactions* characteristic of magnesium.

Dose.

Metric.
30 to 60 mils.

Imperial.
1 to 2 fluid ounces.

This Solution contains about 2 grammes of the official Magnesium Carbonate in 100 millilitres; 1 fluid ounce contains nearly 10 grains.

LIQUOR MORPHINÆ ACETATIS

Solution of Morphine Acetate

Morphine Acetate	1 gramme
Diluted Acetic Acid	2 millilitres
Alcohol (90 per cent.)	25 millilitres
Distilled Water sufficient to produce	100 millilitres

Mix the Alcohol with an equal volume of Distilled Water, adding the Diluted Acetic Acid; dissolve the Morphine Acetate in the mixture, and add sufficient Distilled Water to produce the required volume.

Dose.

Metric.
6 to 36 decimils.

Imperial.
10 to 60 minims.

This Solution contains 1 gramme of Morphine Acetate in 100 millilitres; 110 minims contain 1 grain.

REPORT OF THE COMMISSIONER

1890

The following table shows the number of persons who have been admitted to the various institutions of the State during the year ending June 30, 1890. The total number of admissions is 1,234.

Table showing the number of persons who have been admitted to the various institutions of the State during the year ending June 30, 1890.

The following table shows the number of persons who have been admitted to the various institutions of the State during the year ending June 30, 1890.

Table showing the number of persons who have been admitted to the various institutions of the State during the year ending June 30, 1890.

The following table shows the number of persons who have been admitted to the various institutions of the State during the year ending June 30, 1890.

The following table shows the number of persons who have been admitted to the various institutions of the State during the year ending June 30, 1890.

The following table shows the number of persons who have been admitted to the various institutions of the State during the year ending June 30, 1890.

The following table shows the number of persons who have been admitted to the various institutions of the State during the year ending June 30, 1890.

LIQUOR MORPHINÆ HYDROCHLORIDI**Solution of Morphine Hydrochloride**

Morphine Hydrochloride	1 gramme
Diluted Hydrochloric Acid	2 millilitres
Alcohol (90 per cent.)	25 millilitres
Distilled Water sufficient to produce	100 millilitres

Mix the Alcohol with an equal volume of Distilled Water, adding the Diluted Hydrochloric Acid; dissolve the Morphine Hydrochloride in the mixture, and add sufficient Distilled Water to produce the required volume.

Dose.

Metric.
6 to 36 decimils.

Imperial.
10 to 60 minims.

This Solution contains 1 gramme of Morphine Hydrochloride in 100 millilitres; 110 minims contain 1 grain.

LIQUOR MORPHINÆ TARTRATIS**Solution of Morphine Tartrate**

Morphine Tartrate	1 gramme
Alcohol (90 per cent.)	25 millilitres
Distilled Water sufficient to produce	100 millilitres

Mix the Alcohol with an equal volume of Distilled Water; dissolve the Morphine Tartrate in the mixture; add sufficient Distilled Water to produce the required volume.

Dose.

Metric.
6 to 36 decimils.

Imperial.
10 to 60 minims.

This Solution contains 1 gramme of Morphine Tartrate in 100 millilitres; 110 minims contain 1 grain.

LIQUOR PANCREATIS

Pancreatic Solution

Pancreatic Solution contains the digestive principles of the fresh pancreas of the pig.

Mix two hundred and fifty millilitres of Alcohol (90 per cent.) with two hundred millilitres of Glycerin and sufficient Distilled Water to produce one thousand millilitres. In this macerate for seven days two hundred and fifty grammes of the pancreas, freed from fat and external membrane, and finely divided by trituration with washed sand or powdered pumice stone; filter.

Test.—If 3 millilitres of the Solution together with 0·2 gramme of *sodium bicarbonate* and 20 millilitres of *water* are added to 80 millilitres of milk and the mixture kept at 45° for one hour, on placing 5 millilitres of this liquid with 5 millilitres of *ether* and 5 drops of *nitric acid* in a stoppered tube and gently inverting the tube three times, no curdy precipitate appears in the lower layer.

*Dose.**Metric.*

4 to 8 mils.

Imperial.

1 to 2 fluid drachms.

LIQUOR PICIS CARBONIS

Solution of Coal Tar

Prepared Coal Tar	.	.	.	200 grammes
Quillaia Bark, in No. 20 powder	.	.	.	100 grammes
Alcohol (90 per cent.)	.	.	.	1000 millilitres

Exhaust the powdered Quillaia Bark with the Alcohol by the *percolation process*. To the resulting tincture add the Prepared Coal Tar, and digest the mixture at 50° for two days, stirring occasionally. Cool and decant, or filter.

LIQUOR PLUMBI SUBACETATIS DILUTUS

Diluted Solution of Lead Subacetate

Synonyms—Goulard's Lotion : Goulard Water

Strong Solution of Lead Sub- acetate	12·5 millilitres
Distilled Water, recently boiled and cooled, sufficient to pro- duce	1000·0 millilitres

Mix.

LIQUOR PLUMBI SUBACETATIS FORTIS

Strong Solution of Lead Subacetate

Synonym—Goulard's Extract

Lead Acetate	250 grammes
Lead Oxide, in powder	175 grammes
Distilled Water sufficient to pro- duce	1000 millilitres

Dissolve the Lead Acetate in seven hundred and fifty millilitres of the Distilled Water, add the Lead Oxide, set aside for forty-eight hours, shaking occasionally; filter and wash the filter with sufficient Distilled Water to produce the required volume.

Characters and Tests.—A clear colourless liquid, with alkaline reaction and sweet astringent taste. Becomes turbid by exposure to the air. Forms with *mucilage of gum acacia* an opaque white jelly. Yields the *reactions* characteristic of lead and of acetates. Specific gravity 1·275. When 1 gramme is diluted with 20 millilitres of *water* and mixed with excess of *N/1 solution of oxalic acid*, the precipitate collected, washed, transferred to a flask and decomposed with excess of *diluted sulphuric acid*, the mixture thus obtained heated to 60°, decolorises not less

than 17 millilitres of *N/10* solution of potassium permanganate.

LIQUOR POTASSÆ

Solution of Potash

Solution of Potash is an aqueous solution containing in 100 millilitres 5 grammes of potassium hydroxide, KOH; in 110 minims 5 grains. It should be preserved in a green glass bottle furnished with an air-tight stopper.

50% *

Characters and Tests.—A colourless, strongly alkaline liquid. Yields no characteristic *reactions* for lead, copper, arsenic, iron, aluminium, calcium, magnesium, sodium, or ammonium, and not more than the slightest *reactions* for carbonates, chlorides, or sulphates. Specific gravity 1.045. 20 millilitres require for neutralisation 17.8 millilitres of *N/1* solution of sulphuric acid.

Dose.

Metric.
6 to 18 decimils,
freely diluted.

Imperial.
10 to 30 minims,
freely diluted.

LIQUOR POTASSII PERMANGANATIS

Solution of Potassium Permanganate

Potassium Permanganate . . .	10 grammes
Distilled Water sufficient to produce	1000 millilitres

Dissolve.

Dose.

Metric.
7 to 15 mils.

Imperial.
2 to 4 fluid drachms.

This Solution contains 1 gramme of Potassium Permanganate in 100 millilitres; 110 minims contain 1 grain.

LIQUOR SODÆ CHLORINATÆ

Solution of Chlorinated Soda

Chlorinated Lime	. . .	100 grammes
Sodium Carbonate	. . .	150 grammes
Distilled Water	. . .	1000 millilitres

Dissolve the Sodium Carbonate in two hundred and fifty millilitres of the Distilled Water; thoroughly triturate the Chlorinated Lime with the remainder of the Distilled Water; mix the two liquids; shake occasionally during three or four hours; filter. This Solution should be freshly prepared.

Characters and Tests.—A colourless alkaline liquid with a faint odour of chlorine and astringent taste. Decomposed by *hydrochloric acid*, evolving chlorine. Yields not more than slight *reactions* for calcium or carbonates. Specific gravity 1·054. If 5 millilitres are added to a solution of 1 gramme of *potassium iodide* in 100 millilitres of *water* acidified with 5 millilitres of *hydrochloric acid*, a brownish-red colour is produced, for the discharge of which not less than 37·6 millilitres of *N/10 solution of sodium thiosulphate* are required, corresponding to not less than 2·5 per cent. of available chlorine.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
6 to 12 decimils.	10 to 20 minims.

LIQUOR SODII ARSENATIS

Solution of Sodium Arsenate

Anhydrous Sodium Arsenate	. . .	1 gramme
Distilled Water sufficient to produce		100 millilitres

Dissolve,

*Dose.**Metric.*

12 to 50 centimils.

Imperial.

2 to 8 minims.

This Solution contains the equivalent of 1 gramme of Anhydrous Sodium Arsenate in 100 millilitres ; 110 minims contain the equivalent of 1 grain.

LIQUOR STRYCHNINÆ HYDROCHLORIDI**Solution of Strychnine Hydrochloride**

Strychnine Hydrochloride . . .	1 gramme
Alcohol (90 per cent.) . . .	25 millilitres
Distilled Water sufficient to produce	100 millilitres

Mix the Alcohol with an equal volume of Distilled Water ; dissolve the Strychnine Hydrochloride in the mixture and add sufficient Distilled Water to produce the required volume.

*Dose.**Metric.*

12 to 50 centimils.

Imperial.

2 to 8 minims.

This Solution contains 1 gramme of Strychnine Hydrochloride in 100 millilitres ; 110 minims contain 1 grain.

LIQUOR TRINITRINI**Solution of Trinitrin***Synonym*—Solution of Nitroglycerin

Trinitroglycerin of commerce . . .	1 gramme
Alcohol (90 per cent.) sufficient to produce	100 millilitres

Dissolve,

Characters and Tests.—A clear colourless liquid, neutral to *litmus*. Specific gravity 0.840. A mixture of 10 millilitres with an equal volume of *water*, cooled to 15.5°, remains clear, but the further admixture of 1 millilitre of *water* causes opacity (presence of a due amount of glyceryl trinitrate). On further diluting with *water* and setting the mixture aside, there is deposited a liquid of oily consistence, one drop of which, absorbed by paper and struck with a hammer on a hard surface, explodes.

*Dose.**Metric.*

3 to 12 centimils.

Imperial. $\frac{1}{2}$ to 2 minims.

This Solution contains 1 gramme of trinitro glycerin in 100 millilitres; 110 minims contain 1 grain.

LIQUOR ZINCI CHLORIDI

Solution of Zinc Chloride

Granulated Zinc	400 grammes
Hydrochloric Acid	1100 millilitres
Distilled Water	a sufficient quantity

Mix the Hydrochloric Acid with five hundred millilitres of Distilled Water in a porcelain dish; add the Zinc; apply gentle heat until gas is no longer evolved; boil for half an hour, supplying the water lost by evaporation; allow the product to cool. Test a few drops of the resulting liquid for iron and lead.

If either be present, filter the remainder of the product into a bottle, and add *solution of chlorine* by degrees, with frequent shaking, until the liquid acquires a permanent odour of chlorine; add Zinc Carbonate in small quantities at a time, with renewed shaking, until the whole of the iron or lead is precipitated; filter the liquid and evaporate to one thousand millilitres.

If no iron or lead be present, filter the cooled product and evaporate it to one thousand millilitres.

Characters and Tests.—A colourless liquid ; taste astringent and sweetish. Specific gravity 1.530. Yields no characteristic *reactions* for lead, copper, cadmium, arsenic, iron, aluminium, calcium, magnesium, or sulphates.

LITHII CARBONAS

Lithium Carbonate

Lithium Carbonate may be obtained from native silicates of lithium. It contains not less than 98.5 per cent. of pure lithium carbonate, Li_2CO_3 .

Characters and Tests.—White powder, or minute crystalline grains. Taste slightly alkaline. Soluble in 80 parts of *water* ; insoluble in *alcohol* (90 per cent.). Aqueous solution alkaline to *litmus*. Soluble with effervescence in *hydrochloric acid* ; the solution evaporated to dryness leaves a residue which communicates a crimson colour to flame, and, redissolved in *water*, yields a precipitate with *solution of sodium phosphate*. 1 gramme, diffused in about 50 millilitres of *water*, requires for neutralisation not less than 26.6, or more than 27.1 millilitres of *N/1 solution of sulphuric acid*, *solution of methyl orange* being used as indicator. Yields no characteristic *reactions* for copper, iron, aluminium, zinc, magnesium, or chlorides, and not more than the slightest *reactions* for calcium or sulphates. *Lead limit* 10 parts per million. *Arsenic limit* 5 parts per million.

Dose.

Metric.

12 to 30 centigrams.

Imperial.

2 to 5 grains.

LITHII CITRAS

Lithium Citrate

Lithium Citrate may be obtained by the interaction of citric acid and lithium carbonate. It contains not less than 98·5 per cent. of pure lithium citrate, $\text{Li}_3\text{C}_6\text{H}_5\text{O}_7, 4\text{H}_2\text{O}$.

Characters and Tests.—Small white crystals. Taste saline, cooling. Soluble in 2 parts of *water*. Yields the *reactions* characteristic of citrates. Heated to redness it blackens, evolving inflammable gases; and the residue, neutralised with *hydrochloric acid*, yields with *alcohol* (90 per cent.) a solution which burns with a crimson flame. 1 gramme, heated to redness till gases cease to be evolved, leaves an alkaline residue which, when treated with *water*, filtered, and well washed, yields a clear solution requiring for neutralisation not less than 10·5 millilitres of *N/1 solution of sulphuric acid*. *Lead limit* 5 parts per million. *Arsenic limit* 2 parts per million. Free from the impurities mentioned under ‘*Lithii Carbonas*.’

*Dose.**Metric.*

3 to 6 decigrams.

Imperial.

5 to 10 grains.

LITHII CITRAS EFFERVESCENS

Effervescent Lithium Citrate

Sodium Bicarbonate, in powder	. 580 grammes
Tartaric Acid, in powder	. . 310 grammes
Citric Acid, in powder	. . . 210 grammes
Lithium Citrate	. . . 50 grammes

Mix the Lithium Citrate with the Citric Acid, then add the Tartaric Acid, and, lastly, the Sodium Bicarbonate, triturating thoroughly. Place the mixture in a dish or

THE UNIVERSITY OF CHICAGO

THE UNIVERSITY OF CHICAGO

The University of Chicago is a private research university in Chicago, Illinois. It was founded in 1837 as the first American university to be organized on the basis of the European model. The university is known for its commitment to academic excellence and its role in the development of modern higher education in the United States. It has a long history of producing world-class scholars and leaders in various fields of study. The university's research output is highly influential, and it has played a significant role in shaping the intellectual landscape of the United States and the world.

THE UNIVERSITY OF CHICAGO

THE UNIVERSITY OF CHICAGO

THE UNIVERSITY OF CHICAGO

The University of Chicago is a private research university in Chicago, Illinois. It was founded in 1837 as the first American university to be organized on the basis of the European model. The university is known for its commitment to academic excellence and its role in the development of modern higher education in the United States. It has a long history of producing world-class scholars and leaders in various fields of study. The university's research output is highly influential, and it has played a significant role in shaping the intellectual landscape of the United States and the world.

pan of suitable form heated to between 93° and 104° . When the mixture, by the aid of careful manipulation, has assumed a granular character, separate it, by means of suitable sieves, into granules of uniform and convenient size. Dry the granules at a temperature not exceeding 55° . The product weighs about one thousand grammes.

*Dose.**Metric.*

4 to 8 grammes.

Imperial.

60 to 120 grains.

LOBELIA

Lobelia

Lobelia is the dried flowering herb of *Lobelia inflata* Linn.

Characters and Test.—Stems angular, channelled, and furnished with narrow wings; often of a purplish tint; bearing one-celled hairs and the scars of alternate leaves. Leaves irregularly toothed and hairy. Capsules inflated, two-celled, containing, when ripe, minute, oblong, reticulated, brown seeds. In transverse section of the stem, laticiferous vessels in the bast. Somewhat irritating odour; taste at first not marked, but subsequently burning and acrid. Ash not more than 12 per cent.

LOTIO HYDRARGYRI FLAVA

Yellow Mercurial Lotion

Synonym —Yellow Wash

Mercuric Chloride	.	.	.	4.6 grammes
Solution of Lime	.	.	.	1000.0 millilitres

Mix.

LOTIO HYDRARGYRI NIGRA**Black Mercurial Lotion***Synonym*—Black Wash

Mercurous Chloride	6.85 grammes
Glycerin	50.00 millilitres
Solution of Lime sufficient to produce	1000.00 millilitres

Triturate the Mercurous Chloride with the Glycerin and gradually add sufficient Solution of Lime to produce the required volume.

Liquor. p. 218

MAGNESIA LEVIS**Light Magnesia**

Synonyms—Light Calcined Magnesia: Light Magnesium Oxide

Light Magnesia, MgO , is prepared by exposing Light Magnesium Carbonate to a dull red heat.

Characters and Tests.—A white powder differing only from 'Magnesia Ponderosa' in its bulk, the volumes corresponding to the same weight having the ratio of three and a half to one.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
3 to 12 decigrams (repeated).	5 to 20 grains (repeated).
2 to 4 grammes (single).	30 to 60 grains (single).

MAGNESIA PONDEROSA**Heavy Magnesia**

Synonyms—Heavy Calcined Magnesia: Heavy Magnesium Oxide

Heavy Magnesia, MgO , is prepared by exposing Heavy Magnesium Carbonate to a dull red heat.

Characters and Tests.—A white powder, insoluble in water, but readily dissolved by acids, the solution yielding the *reactions* characteristic of magnesium. Yields no characteristic *reactions* for aluminium and copper, and not more than the slightest *reactions* for iron, calcium, carbonates and sulphates. *Lead limit* 20 parts per million. *Arsenic limit* 5 parts per million. Loses not more than 1 per cent. of its weight when heated to dull redness.

*Dose.**Metric.**Imperial.*

3 to 12 decigrams (repeated).	5 to 20 grains (repeated).
2 to 4 grammes (single).	30 to 60 grains (single).

MAGNESII CARBONAS LEVIS**Light Magnesium Carbonate**

Light Magnesium Carbonate is a hydrated magnesium oxycarbonate obtained by the following process:—

Magnesium Sulphate	.	.	.	125 grammes
Sodium Carbonate	.	.	.	150 grammes
Distilled Water	.	.	.	a sufficient quantity

Dissolve the Magnesium Sulphate and the Sodium Carbonate each in one thousand millilitres of cold Distilled Water; mix the two solutions; boil the mixture for fif-

teen minutes; transfer the precipitate to a calico filter; wash it with boiling Distilled Water until the washings are free from sulphates, and dry at a temperature not exceeding 100°.

Characters and Tests.—A very light, white powder, which, when examined under the microscope, is found to consist of amorphous particles with numerous slender prisms intermixed. It otherwise responds to the characters and tests described under ‘*Magnesii Carbonas Ponderosus*.’

Dose.

<i>Metric.</i>	<i>Imperial.</i>
3 to 12 decigrams (repeated).	5 to 20 grains (repeated d).
2 to 4 grammes (single).	30 to 60 grains (single).

MAGNESII CARBONAS PONDEROSUS

Heavy Magnesium Carbonate

Heavy Magnesium Carbonate is a hydrated magnesium oxycarbonate obtained by the following process :—

Magnesium Sulphate	125 grammes
Sodium Carbonate	150 grammes
Distilled Water, boiling	a sufficient quantity

Dissolve the Magnesium Sulphate and the Sodium Carbonate each in two hundred and fifty millilitres of the Distilled Water; mix the solutions, and evaporate to dryness; digest the residue for half an hour with five hundred millilitres of the Distilled Water; collect the insoluble matter on a calico filter, wash with the Distilled Water until the washings are free from sulphates, and dry at a temperature not exceeding 100°.

Characters and Tests.—A white granular powder. Readily soluble, with effervescence, in the diluted mineral acids,

the solutions yielding the *reactions* characteristic of magnesium. Loses from 56 to 58 per cent. of its weight when heated to redness. Yields no characteristic *reactions* for aluminium, copper, or calcium, and not more than the slightest *reactions* for iron, chlorides or sulphates. *Lead limit* 20 parts per million. *Arsenic limit* 5 parts per million.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
3 to 12 decigrams (repeated).	5 to 20 grains (repeated).
2 to 4 grammes (single).	30 to 60 grains (single).

MAGNESII SULPHAS

Magnesium Sulphate

Synonym—Epsom Salts

Magnesium Sulphate may be obtained by the interaction of the native magnesium carbonates and diluted sulphuric acid; or by purifying the native sulphate. It contains not less than 97·4 per cent. of pure magnesium sulphate, $\text{MgSO}_4, 7\text{H}_2\text{O}$.

Characters and Tests.—In small, colourless, transparent, rhombic prisms. Taste bitter. Soluble in 1 part of *water*. Yields the *reactions* characteristic of magnesium and of sulphates. When 0·5 gramme is dissolved in 50 millilitres of *water*, and to the solution 20 millilitres of *solution of ammonium chloride*, 20 millilitres of *strong solution of ammonia* and excess of *solution of sodium phosphate* are added in succession, the mixture, after well stirring and setting aside for twelve hours, yields a precipitate which, when collected, washed with *strong solution of ammonia* diluted with three times its volume of *water*, dried and heated to redness, weighs not less than 0·220 and not more than 0·226 gramme. Yields no characteristic *reactions* for zinc, and not more than the slightest *reactions* for

chlorides. *Lead limit* 5 parts per million. *Arsenic limit* 5 parts per million. 10 grammes dissolved in 20 millilitres of *water*, and heated on a water-bath for one hour in a closed flask, yields a clear, colourless solution (absence of insoluble impurities and of more than traces of iron.)

*Dose.**Metric.**Imperial.*

2 to 6 grammes (repeated).	30 to 90 grains (repeated).
8 to 16 grammes (single).	120 to 240 grains (single).

MAGNESII SULPHAS EFFERVESCENS**Effervescent Magnesium Sulphate**

Synonym—Effervescent Epsom Salts

Magnesium Sulphate, in crystals	. 500 grammes
Sodium Bicarbonate, in powder	. 360 grammes
Tartaric Acid, in powder	. 190 grammes
Citric Acid, in powder	. 125 grammes
Refined Sugar, in powder	. 105 grammes

Dry the Magnesium Sulphate at about 55° until it has lost twenty-three per cent. of its weight; powder the dried product; mix it with the Refined Sugar and then with the other ingredients. Place the mixture in a dish or pan of suitable form heated to between 93° and 104°. When the mixture, by aid of careful manipulation, has assumed a granular character, separate it into granules of uniform and convenient size by means of suitable sieves. Dry the granules at a temperature not exceeding 55°. The product weighs about one thousand grammes.

*Dose.**Metric.**Imperial.*

4 to 12 grammes (repeated).	60 to 180 grains (repeated).
16 to 32 grammes (single).	240 to 480 grains (single).

MEL BORACIS

Borax Honey

Purified Borax, in fine powder.	. 10 grammes
Glycerin	. 5 grammes
Purified Honey	. 85 grammes

Mix.

MEL DEPURATUM

Purified Honey

Purified Honey is honey of commerce melted and strained, the specific gravity, if necessary, being adjusted to 1·36 by the addition of distilled water.

Characters and Tests.—A syrupy translucent pale yellowish liquid. Aromatic odour; taste at first sweet, afterwards faintly acrid. Specific gravity 1·36. *Optical rotation* of a solution in *water*, containing 25 grammes in 100 millilitres, decolorised by filtration with *animal charcoal* in a tube 200 millimetres long, between 0° and —5° at 15°; 5 millilitres of the same solution when mixed with 15 millilitres of *absolute alcohol* do not become more than faintly opalescent (absence of starch sugar). When 2 grammes are dissolved in 20 millilitres of boiling *water* and cooled, the solution does not become blue on the addition of one drop of *N/10 solution of iodine* (absence of starch). Ash not more than 0·25 per cent.; solution of the ash in *water* is not alkaline to *litmus*, and when acidified with *nitric acid* yields not more than a very faint opalescence with *solution of barium chloride*, or with *solution of silver nitrate* (limit of sulphates and of chlorides).

MENTHOL

Menthol

Menthol is a crystalline substance, $C_{10}H_{20}O$, obtained by cooling the oil distilled from the fresh herb of *Mentha arvensis*, *DC.*, *vars.* *piperascens* et *glabrata*, *Holmes*; and probably other species.

Characters and Tests.—Colourless acicular crystals or crystalline masses. Melting point 42° to 43° . Odour and taste recalling peppermint; produces a sensation of warmth on the tongue and, if air is inhaled, a sensation of cold. Entirely volatilised by the heat of a water-bath. Very slightly soluble in *water*, but readily soluble in *alcohol* (90 per cent.), the solutions being neutral to *litmus*. Boiled with *sulphuric acid* diluted with half its volume of *water*, Menthol acquires an indigo-blue or ultramarine colour, the acid becoming brown.

Dose.

Metric.

3 to 12 centigrams.

Imperial.

 $\frac{1}{2}$ to 2 grains.

METHYL SALICYLAS

Methyl Salicylate

Methyl Salicylate is the methyl ester of salicylic acid. It may be obtained by the interaction of methyl alcohol and salicylic acid. It contains not less than 98 per cent. of pure methyl salicylate, $CH_3C_7H_5O_3$.

Characters and Tests.—A colourless liquid. Characteristic, aromatic odour; taste, sweetish, warm, aromatic. Slightly soluble in *water*; readily soluble in *alcohol* (90 per cent.), in *glacial acetic acid*, and in *carbon disulphide*. Specific gravity 1.185 to 1.192. Boiling

point from 219° to 221° . Optically inactive. The solution in *alcohol* (90 per cent.) is neutral or faintly acid to *litmus*. The aqueous solution is coloured violet by the addition of a drop of *T.Sol. of ferric chloride*. Contains not less than 98 per cent. of the *ester* methyl salicylate, $\text{CH}_3, \text{C}_7\text{H}_5\text{O}_3$.

Dose.

Metric.

3 to 10 decimils.

Imperial.

5 to 15 minims.

METHYLSULPHONAL

Methylsulphonal = *Trional*.

Methylsulphonal, or diethyl-sulphone-methyl-ethyl-methane, $\text{C}_8\text{H}_{18}\text{S}_2\text{O}_4$, is an oxidation product of the mercaptol resulting from the condensation of ethyl-methyl ketone with ethyl-mercaptan.

Characters and Tests.—A white crystalline powder; taste slightly bitter. Soluble in 320 parts of *water*, somewhat more soluble in dilute *alcohol*. Melting point from 76° to 76.5° . At a red heat it decomposes with evolution of sulphur dioxide. When heated with *anhydrous sodium acetate* hydrogen sulphide is liberated. When boiled with *water* no offensive odour is developed (absence of mercaptan and mercaptol). 100 millilitres of a cold saturated aqueous solution do not immediately decolorise 1 drop of a 0.1 per cent. solution of *potassium permanganate* (limit of readily oxidisable substances). No appreciable ash.

Dose.

Metric.

6 to 12 decigrams.

Imperial.

10 to 20 grains.

MISTURA AMMONIACI

Ammoniacum Mixture

Ammoniacum, in coarse powder	. 30 grammes
Syrup of Tolu	. 60 millilitres
Distilled Water sufficient to produce	. 1000 millilitres

Triturate the Ammoniacum thoroughly with a little of the Distilled Water so as to form a thin paste ; gradually add the remainder of the Distilled Water and the Syrup of Tolu, triturating until the mixture assumes a uniform milky appearance ; strain through muslin.

Dose.

Metric.
15 to 30 mls.

Imperial.
 $\frac{1}{2}$ to 1 fluid ounce.

MISTURA AMYGDALÆ

Almond Mixture

Compound Powder of Almonds	. 125 grammes
Distilled Water sufficient to produce	. 1000 millilitres

Triturate the Powder with a little of the Distilled Water so as to form a thin paste ; gradually add the remainder of the Distilled Water ; strain through fine muslin.

Dose.

Metric.
15 to 30 mls.

Imperial.
 $\frac{1}{2}$ to 1 fluid ounce.

MISTURA CRETÆ**Chalk Mixture**

Prepared Chalk	30 grammes
Tragacanth, in powder	5 grammes
Refined Sugar	60 grammes
Cinnamon Water sufficient to produce	1000 millilitres

Triturate the Prepared Chalk with the Tragacanth and Refined Sugar, and gradually add, with constant trituration, sufficient Cinnamon Water to produce the required volume.

*Dose.**Metric.*

15 to 30 mils.

Imperial. $\frac{1}{2}$ to 1 fluid ounce.**MISTURA FERRI COMPOSITA****Compound Mixture of Iron**

Ferrous Sulphate, in fine powder.	6 grammes
Potassium Carbonate	8 grammes
Myrrh	15 grammes
Gum Acacia	15 grammes
Glucose	15 grammes
Spirit of Nutmeg	10 millilitres
Rose Water sufficient to pro- duce	1000 millilitres

Powder the Myrrh ; add the Potassium Carbonate, Glucose and Gum Acacia ; triturate the mixture with a small quantity of the Rose Water so as to form a thin paste ; gradually add more Rose Water and the Spirit of Nutmeg ; continue the trituration and further addition of Rose Water until one hundred millilitres of liquid result ; add the Ferrous Sulphate and shake till dissolved.

THE UNIVERSITY OF CHICAGO

CHICAGO, ILL.

TO THE PRESIDENT OF THE UNIVERSITY OF CHICAGO
FROM THE FACULTY OF THE UNIVERSITY OF CHICAGO
RESOLUTION

Resolved, That the Faculty of the University of Chicago
do hereby express its appreciation of the services
of the President of the University of Chicago

and its confidence in his ability to continue
to lead the University of Chicago to the highest
level of scholarship and research.

RESOLUTION

ADOPTED BY THE FACULTY OF THE UNIVERSITY OF CHICAGO

At a meeting of the Faculty of the University of Chicago
held on the 15th day of May, 1912, the following
resolution was adopted:
Resolved, That the Faculty of the University of Chicago
do hereby express its appreciation of the services
of the President of the University of Chicago

and its confidence in his ability to continue
to lead the University of Chicago to the highest
level of scholarship and research.
This resolution was adopted by a vote of 100
yeas to 0 nays.

Dose.

Metric.
15 to 30 mils.

Imperial.
 $\frac{1}{2}$ to 1 fluid ounce.

MISTURA GUAIACI**Guaiacum Mixture**

Guaiacum Resin	25 grammes
Refined Sugar	25 grammes
Tragacanth, in powder . .	5 grammes
Cinnamon Water sufficient to produce	1000 millilitres

Triturate the Guaiacum Resin with the Refined Sugar and the Tragacanth; add gradually, with constant trituration, sufficient Cinnamon Water to produce the required volume.

Dose.

Metric.
15 to 30 mils.

Imperial.
 $\frac{1}{2}$ to 1 fluid ounce.

MISTURA OLEI RICINI**Castor Oil Mixture**

Castor Oil	375 millilitres
Gum Acacia, in powder . .	100 grammes
Orange-flower water of com- merce, undiluted	150 millilitres
Cinnamon Water sufficient to produce	1000 millilitres

Triturate the Castor Oil with the Gum Acacia in a dry mortar; add, in one portion, twenty millilitres of Cinnamon Water, and continue the trituration until the oil is completely emulsified; then, with constant trituration, add the orange-flower water and sufficient Cinnamon Water to produce the required volume.

*Dose (as a single draught).**Metric.**Imperial.*

30 to 60 mils.

1 to 2 fluid ounces.

MISTURA SENNÆ COMPOSITA**Compound Mixture of Senna***Synonym—Black Draught*

Magnesium Sulphate . . .	250 grammes
Liquid Extract of Liquorice . .	50 millilitres
Compound Tincture of Cardamoms . . .	100 millilitres
Aromatic Spirit of Ammonia . .	50 millilitres
Infusion of Senna sufficient to produce . . .	1000 millilitres

Dissolve the Magnesium Sulphate in fifty millilitres of the Infusion of Senna; add the mixed Liquid Extract of Liquorice, Compound Tincture of Cardamoms, and Aromatic Spirit of Ammonia, and sufficient Infusion of Senna to produce the required volume.

*Dose (as a single draught).**Metric.**Imperial.*

30 to 60 mils.

1 to 2 fluid ounces.

MORPHINÆ ACETAS**Morphine Acetate**

Morphine Acetate, $C_{17}H_{19}NO_3 \cdot C_2H_4O_2 \cdot 3H_2O$, is the acetate of an alkaloid, morphine, obtained from opium.

Characters and Tests.—A white, crystalline or amorphous powder. Taste bitter. Almost entirely soluble in 2·5 parts of water. Loses acetic acid when exposed to the air. Yields

the reactions for morphine described under 'Morphinæ Hydrochloridum,' and the *reactions* characteristic of acetates. 2 grammes form with 5 millilitres of warm *morphinated water* a slightly turbid solution which is rendered clear by the addition of 0.1 millilitre of *acetic acid*, and this solution, when mixed with a slight excess of *solution of ammonia*, yields a white precipitate which, after washing and drying as described under 'Morphinæ Hydrochloridum,' weighs from 1.41 to 1.44 grammes. No appreciable ash.

*Dose.**Metric.*

8 to 30 milligrams.

Imperial. $\frac{1}{8}$ to $\frac{1}{2}$ grain.

MORPHINÆ HYDROCHLORIDUM

Morphine Hydrochloride

Morphine Hydrochloride, $C_{17}H_{19}NO_3 \cdot HCl \cdot 3H_2O$, is the hydrochloride of an alkaloid, morphine, obtained from opium.

Characters and Tests.—Acicular crystals, or a white microcrystalline powder. Taste bitter. Soluble in 25 parts of *water*. 1 drop of *solution of ammonia* added to 5 millilitres of a 3 per cent. aqueous solution produces a white crystalline precipitate easily soluble in *solution of sodium hydroxide*, but soluble with difficulty in excess of *solution of ammonia*; this precipitate yields mere traces to *benzene* (absence of certain other alkaloids). Yields, when moistened with *nitric acid*, an orange-red colour; with *T.Sol. of ferric chloride*, a dull greenish-blue. A trace added to 5 millilitres of a very dilute solution of *potassium ferricyanide* to which 1 drop of *T.Sol. of ferric chloride* has been added produces a deep blue colour. 0.1 gramme dissolves in 2 millilitres of *sulphuric acid* without coloration, or with the production of not more than a faint pink colour; if a portion of this solution is heated on a water-bath for fifteen minutes,

cooled, and treated with a few drops of *diluted nitric acid*, a violet coloration, rapidly changing to blood-red, is produced; the addition of *sodium arsenate* to another portion of the original solution produces a bluish-green colour. 1 drop of *solution of potassium carbonate* added to 5 millilitres of a 3 per cent. aqueous solution yields a pure white precipitate which does not become coloured on exposure to the air, and does not colour *chloroform* when shaken with it (distinction from and absence of apomorphine). When 0.5 millilitre of a 1 per cent. aqueous solution is mixed on a white porcelain tile with 0.5 millilitre of *mucilage of starch* in which 0.005 gramme of *iodic acid* has been dissolved, a blue coloration is immediately produced (distinction from morphine esters). Yields the *reactions* characteristic of chlorides. 2 grammes dissolved in 50 millilitres of warm *morphinated water* give, on the addition of a slight excess of *solution of ammonia*, a white, crystalline precipitate which, when washed with a little cold *morphinated water* and dried, first at 55° to 60° and finally for fifteen minutes at 115°, weighs from 1.50 to 1.52 grammes. Loses about 14 per cent. of its weight when dried at 100°. No appreciable ash.

Dose.

Metric.

8 to 30 milligrams.

Imperial.

 $\frac{1}{8}$ to $\frac{1}{2}$ grain.

MORPHINÆ TARTRAS

Morphine Tartrate

Morphine Tartrate, $(C_{17}H_{19}NO_3)_2 \cdot C_4H_6O_6 \cdot 3H_2O$, is the tartrate of an alkaloid, morphine, obtained from opium.

Characters and Tests.—Minute acicular crystals, efflorescent at 20°. Taste bitter. Soluble in 11 parts of *water*, forming a clear solution neutral to *litmus*. Yields the reactions for morphine described under 'Morphinæ Hydro-

chloridum' and the reactions characteristic of tartrates. 2 grammes dissolved in 20 millilitres of warm *morphinated water* give, on the addition of a slight excess of *solution of ammonia*, a precipitate which, after washing and drying as described under 'Morphinæ Hydrochloridum,' weighs from 1.46 to 1.49 grammes. No appreciable ash.

*Dose.**Metric.*

8 to 30 milligrams.

Imperial. $\frac{1}{8}$ to $\frac{1}{2}$ grain.

MUCILAGO ACACIÆ

Mucilage of Gum Acacia

Gum Acacia	.	.	.	.	100 grammes
Distilled Water	.	.	.	.	150 millilitres

Rapidly rinse the Gum Acacia with a little *water*; then dissolve it in the Distilled Water in a closed vessel and strain. It should be recently prepared.

MUCILAGO GUMMI INDICI

Mucilage of Indian Gum

Indian Gum	.	.	.	.	50 grammes
Distilled Water	.	.	.	.	150 millilitres

Rapidly rinse the Indian Gum with a little *water*; then dissolve it in the Distilled Water in a closed vessel and strain. It should be recently prepared.

In India and the Eastern Divisions of the Empire, Mucilage of Indian Gum may be employed in making the official preparations for which Mucilage of Gum Acacia is directed to be used (see 'Gummi Indicum').

MUCILAGO TRAGACANTHÆ**Mucilage of Tragacanth**

Tragacanth, in powder . . .	1.25 grammes
Alcohol (90 per cent.) . . .	2.50 millilitres
Distilled Water sufficient to produce	100.00 millilitres

Mix the Tragacanth with the Alcohol; add the Distilled Water as quickly as possible, and shake vigorously.

MYRISTICA**Nutmeg**

Nutmeg is the dried kernel of the seed of *Myristica fragrans*, *Houtt.*

Characters.—Broadly oval or rounded, rarely more than twenty-five millimetres long; greyish-brown externally, and marked with reticulated furrows, and minute black points and lines; internally greyish-red with darker brownish-red veins; in transverse section marbled. Strong aromatic odour; taste aromatic, warm and somewhat bitter.

MYROBALANUM**Myrobalans**

Myrobalans are the dried immature fruits of *Terminalia Chebula*, *Retz.*, usually distinguished in commerce as Chebulic myrobalans.

Characters.—Irregularly ovoid or fusiform, from ten to thirty millimetres or more long and from five to fifteen millimetres wide; strongly shrivelled longitudinally, dark brown or nearly black, in transverse section dark, with a small central cavity; hard. No odour; taste very astringent.

Dose (in powder).

Metric.

2 to 4 grammes.

Imperial.

30 to 60 grains.

MYRRHA

Myrrh

Myrrh is an oleo-gum-resin obtained from the stem of *Commiphora Myrrha*, *Holmes*, and probably other species.

Characters and Tests.—In rounded or irregular tears, or masses of agglutinated tears, varying much in size; reddish-brown or reddish-yellow externally, dry, and more or less covered by a fine powder; brittle, the fractured surface irregular, somewhat translucent, of a rich brown colour, oily, and frequently exhibiting whitish marks. Aromatic odour; taste aromatic, bitter, and acrid. Not more than 70 per cent. insoluble in *alcohol* (90 per cent.). The tincture obtained by boiling 0·1 gramme of coarsely powdered Myrrh with 2 millilitres of *alcohol* (90 per cent.), evaporated in a porcelain dish so as to leave a thin film, yields a residue which assumes a violet colour in contact with *nitric acid* diluted with an equal volume of *water*. Ash not more than 5 per cent.

Dose.

Metric.

3 to 10 decigrams.

Imperial.

5 to 15 grains.

NAPHTHOL

Beta-naphthol

Beta-naphthol, or beta-mono-hydroxy-naphthalene, $C_{10}H_7OH$, may be obtained from naphthalene-sulphonic acid.

Characters and Tests.—White, or nearly white, crystalline lamellæ, or in powder. Odour resembling that of phenol; taste sharp, pungent. Soluble in about 1000 parts of *water*, and in 75 parts of boiling *water*, the solutions being neutral to *litmus*; soluble in less than 2 parts of *alcohol* (90 per cent.); very soluble in *ether*, in *chloroform*, and in *solution of sodium hydroxide*. Melting point 122°. A hot saturated aqueous solution develops a blue fluorescence on the addition of 1 drop of *solution of ammonia*. A cold saturated aqueous solution gives a white turbidity with *solution of chlorine*, which, on the addition of excess of *solution of ammonia*, gives place to a green or brown coloration. 0.1 gramme dissolved in 10 millilitres of boiling *water* gives with 10 drops of a 3 per cent. aqueous solution of *ferric chloride* a white precipitate becoming brown, but not violet (absence of alpha-naphthol). No appreciable ash.

*Dose.**Metric.*

2 to 6 decigrams.

Imperial.

3 to 10 grains.

NUX VOMICA

Nux Vomica

Nux Vomica consists of the dried ripe seeds of *Strychnos Nux-vomica*, *Linn.*

Characters and Test.—Seeds disc-shaped, nearly flat, but sometimes irregularly bent; rounded or somewhat acute at the margin, from a small prominence on which a raised line passes to the central hilum. Ash-grey or greenish-grey. From two to two and a half centimetres in diameter, and about six millimetres thick. Surface densely covered with short, satiny, radiately arranged and closely appressed hairs. Endosperm large and horny; cotyledons small and leafy. Powdered Nux Vomica exhibits frag-

ments of the endosperm, the cell-walls of which are very thick but not lignified, slender rod-like fragments of the hairs and also their thickened, pitted, lignified basal portions. No odour; taste extremely bitter. Yields not less than 1·25 per cent. of strychnine when tested by the following process:—

Shake 7·5 grammes of Nux Vomica in No. 60 powder frequently during half an hour with a mixture of 25 millilitres of *chloroform*, 50 millilitres of *ether*, and 5 millilitres of *solution of ammonia*. Transfer 50 millilitres of the clear ethereal liquid to a separator, and extract the alkaloids by shaking with three successive portions, each of 10 millilitres, of *N/1 solution of sulphuric acid*, transferring the acid solutions to a second separator. Make the acid solutions alkaline with *solution of ammonia*, and again extract the alkaloids by shaking successively with 10, 5, and 5 millilitres of *chloroform*, drawing off the chloroformic solutions into a small flask. Remove the chloroform by distillation, dissolve the residue in 15 millilitres of *sulphuric acid* (3 per cent.), heat the solution to 50°, add 3 millilitres of a mixture of equal volumes of *nitric acid* and *water*, and set aside for ten minutes. Transfer the solution to a separator, rinsing the flask with a little *water*, make alkaline with *solution of sodium hydroxide*, and extract the alkaloid by shaking successively with 10, 5, and 5 millilitres of *chloroform*. Wash the mixed chloroformic solutions in a separator with 5 millilitres of *water*, transfer to a tared dish and allow the chloroform to evaporate, adding towards the end 5 millilitres of *alcohol* (90 per cent.). Evaporate to dryness, dry the residue at 100° and weigh. This weight, multiplied by 20, is the weight of strychnine in 100 grammes of the powdered Nux Vomica.

Powdered Nux Vomica, when used for official purposes other than the production of standardised preparations, must be adjusted, if necessary, by the addition of powdered Milk Sugar to contain in 100 grammes when tested by the foregoing process 1·25 grammes of strychnine. *Limit of error* 0·05 gramme in excess or defect.

Dose (in powder).

Metric.
6 to 25 centigrams.

Imperial.
1 to 4 grains.

OLEUM ABIETIS

Oil of Siberian Fir

Synonym—Oil of Pine

Oil of Siberian Fir is the oil distilled from the fresh leaves of *Abies sibirica*, *Ledeb.*

Characters and Tests.—Colourless or nearly so. Aromatic odour; taste pungent. Specific gravity 0.900 to 0.920; optical rotation -32° to -42° ; refractive index at 25° about 1.474. Contains from 30 to 40 per cent. of esters, calculated as bornyl acetate, $C_{10}H_{17}C_2H_3O_2$.

OLEUM AJOWAN

Ajowan Oil

Synonym—Ptychotis Oil

Ajowan Oil is the oil distilled from the fruit of *Carum copticum*, *Benth. and Hook. f.*

Characters and Tests.—Colourless, with an odour and taste resembling thyme. Specific gravity 0.910 to 0.930. Optical rotation $+1^{\circ}$ to $+2^{\circ}$. When 10 millilitres with 100 millilitres of solution of sodium hydroxide in a flask with narrow graduated neck are heated on a water-bath, well shaken, and allowed to stand, the uncombined oil, cooled to 15.5° , measures not more than 6 millilitres (presence of not less than 40 per cent. of thymol).

Dose.

Metric.
3 to 18 centimils.

Imperial.
 $\frac{1}{4}$ to 3 minims.

OLEUM AMYGDALÆ

Almond Oil

Almond Oil is the oil expressed from the Bitter or Sweet Almond.

Characters and Tests.—Pale yellow. Nearly inodorous; taste bland and nutty. Specific gravity 0.915 to 0.920. *Saponification value* 188 to 196; *iodine value* 93 to 100; *acid value* not more than 6.0; *refractive index* at 40° 1.4624 to 1.4640. Remains clear after exposure for three hours to a temperature of -10° , and does not congeal till the temperature has been reduced to about -18° . When 1 millilitre of a freshly prepared mixture of equal parts by weight of *sulphuric acid*, *fuming nitric acid*, and *water*, kept cool while cautiously mixed, is vigorously shaken with 5 millilitres of the Oil for one minute, a whitish mixture with not more than the very slightest tinge of red or brown is produced; after some hours a white solid, sometimes tinged with green, separates, the lower acid layer remaining colourless (absence of peach oil and apricot oil).

OLEUM ANETHI

Oil of Dill

Oil of Dill is the oil distilled from Dill Fruit.

Characters and Tests.—Colourless or pale yellow, darkening on keeping. Odour that of Dill Fruit; taste at first sweet and aromatic, but subsequently pungent. Specific gravity 0.900 to 0.915; *optical rotation* $+70^{\circ}$ to $+80^{\circ}$; *refractive index* at 25° 1.483 to 1.488. Soluble in 3 parts of *alcohol* (90 per cent.).

Dose.

Metric.
3 to 18 centimils.

Imperial.
 $\frac{1}{2}$ to 3 minims.

S

OLEUM ANISI

Oil of Anise

Oil of Anise is the oil distilled from Anise Fruit ; or from the fruit of the star-anise, *Illicium verum*, *Hook. f.*

Characters and Tests.—Colourless or pale yellow. Odour that of Anise Fruit ; taste sweet and aromatic. Specific gravity at 20° (compared with *water* at 15·5°) 0·975 to 0·990 ; *optical rotation* -2° to $+1^{\circ}$; *refractive index* at 25° 1·552 to 1·558. Congeals, when stirred, at about 15°, and does not again liquefy below 17°. Not less than 80 per cent. distils between 225° and 235°. Soluble in 3 parts of *alcohol* (90 per cent.).

*Dose.**Metric.*

3 to 18 centimils.

Imperial. $\frac{1}{2}$ to 3 minims.

OLEUM ANTHEMIDIS

Oil of Chamomile

Oil of Chamomile is the oil distilled from Chamomile Flowers.

Characters and Tests.—Blue when freshly distilled, but gradually becoming greenish or brownish-yellow under the influence of air and light. Odour that of Chamomile Flowers ; taste aromatic, characteristic. Specific gravity 0·905 to 0·915. *Optical rotation* -1° to $+3^{\circ}$; *refractive index* at 25° about 1·445. Soluble in less than 1 part of *alcohol* (90 per cent.).

*Dose.**Metric.*

3 to 18 centimils.

Imperial. $\frac{1}{2}$ to 3 minims.

CLAY MUSEUM

1914-15

The following is a list of the
specimens of the genus *Clay*
collected by the author during
his expedition to the
mountainous regions of the
State of Mexico, in the
years 1914 and 1915. The
specimens are deposited in the
Clay Museum, and are
available for study and
reference.

ANTHROPOLOGICAL MUSEUM

CLAY MUSEUM

The following is a list of the
specimens of the genus *Clay*
collected by the author during
his expedition to the
mountainous regions of the
State of Mexico, in the
years 1914 and 1915. The
specimens are deposited in the
Clay Museum, and are
available for study and
reference.

1914-15

OLEUM ARACHIS

Arachis Oil

Synonyms—Earth-nut Oil: Ground-nut Oil: Pea-nut Oil

Arachis Oil is the oil expressed from the seeds of *Arachis hypogæa*, *Linn.*

Characters and Tests.—Pale yellow or greenish-yellow. Faint, nut-like odour; taste bland, nutty. Specific gravity 0.916 to 0.921; *saponification value* 190 to 196; *iodine value* 83 to 101; *acid value* not more than 6; *refractive index* at 40° 1.4628 to 1.4645. When 1 millilitre of the Oil and 15 millilitres of *N/1 alcoholic solution of potassium hydroxide* are boiled for twenty minutes in a flask provided with a reflux condenser, set aside for twenty-four hours at a temperature not exceeding 15°, and afterwards heated on a water-bath for three minutes, the solution deposits crystals on standing. When a mixture of 2 millilitres of the Oil and 1 millilitre of *hydrochloric acid* containing 1 per cent. of *refined sugar* is shaken for half a minute, and allowed to stand for five minutes, the acid layer does not become pink (absence of sesame oil). When 2 millilitres of the Oil are mixed with 1 millilitre of *amylic alcohol* and 1 millilitre of a 1 per cent. solution of *sulphur* in *carbon disulphide*, and the mixture heated in a test-tube immersed in boiling water, no red colour is developed within fifteen minutes (absence of cotton seed oil).

In India, and in the Eastern, African and Australasian Divisions of the Empire, Arachis Oil may be employed in making the official Liniments, Ointments, Plasters, and Soaps for which Olive Oil is directed to be used.

OLEUM CADINUM

Oil of Cade

Synonym—Juniper Tar Oil

Oil of Cade is an empyreumatic oily liquid obtained by the destructive distillation of the woody portions of *Juniperus Oxycedrus*, *Linn.*

Characters and Tests.—A dark reddish-brown or nearly black, oily liquid. Empyreumatic odour; taste aromatic, bitter and acid. Specific gravity about 0.990. Soluble in *ether*, and in *chloroform*; partially soluble in cold, almost wholly soluble in hot *alcohol* (90 per cent.); very slightly soluble in *water*, the filtered aqueous solution being almost colourless and possessing an acid reaction. Yields no reaction for pine tar when tested as follows:—

Shake 1 millilitre of the Oil vigorously with 15 millilitres of *petroleum spirit*, and filter; to 10 millilitres of the filtrate add 10 millilitres of *solution of copper acetate*, shake vigorously, and set aside until separation into two layers is complete; 5 millilitres of the upper layer, when mixed with 10 millilitres of *ether*, become pale brownish-yellow, but not green (absence of pine tar).

OLEUM CAJUPUTI

Oil of Cajuput

Oil of Cajuput is the oil distilled from the leaves of *Melaleuca Leucadendron*, *Linn.*, and other species.

Characters and Tests.—Green or bluish-green. Agreeable, camphoraceous odour; taste aromatic, bitter and camphoraceous. Specific gravity 0.919 to 0.930; *optical rotation* not more than -4° ; *refractive index* at 25° 1.460 to 1.467. When 10 millilitres of the Oil are mixed with 4 to 5 millilitres of *syrupy phosphoric acid* in a vessel sur-

rounded by a freezing mixture, and then pressed strongly in a piece of fine calico between folds of blotting-paper, the pressed cake, decomposed by *water*, yields not less than 4·5 millilitres of cineol.

Dose.

Metric.
3 to 18 centimils.

Imperial,
 $\frac{1}{2}$ to 3 minims.

OLEUM CARUI

Oil of Caraway

Oil of Caraway is the oil distilled from Caraway Fruit, and rectified.

Characters and Tests.—Colourless or pale yellow. Odour and taste those of Caraway Fruit. Specific gravity 0·910 to 0·920; *optical rotation* $+75^{\circ}$ to $+82^{\circ}$; *refractive index* at 25° 1·485 to 1·497. Soluble in 1 part of *alcohol* (90 per cent.), and in 10 parts of a mixture of equal volumes of *alcohol* (90 per cent.) and *alcohol* (70 per cent.). When fractionally distilled from a distillation flask at the rate of one drop per second, not less than 50 per cent. distils at a temperature above 200° .

Dose.

Metric.
3 to 18 centimils.

Imperial.
 $\frac{1}{2}$ to 3 minims.

OLEUM CARYOPHYLLI

Oil of Cloves

Oil of Cloves is the oil distilled from Cloves.

Characters and Tests.—Colourless or pale yellow when recent, darkening with age and on exposure to air. Odour

SECTION I. GENERAL PRINCIPLES

The first principle of the theory of the mind is that the mind is a faculty of the soul, and that the soul is a faculty of the body. The second principle is that the mind is a faculty of the soul, and that the soul is a faculty of the body. The third principle is that the mind is a faculty of the soul, and that the soul is a faculty of the body.

The fourth principle is that the mind is a faculty of the soul, and that the soul is a faculty of the body. The fifth principle is that the mind is a faculty of the soul, and that the soul is a faculty of the body.

SECTION II. THE NATURE OF THE MIND

The first principle of the theory of the mind is that the mind is a faculty of the soul, and that the soul is a faculty of the body.

The second principle is that the mind is a faculty of the soul, and that the soul is a faculty of the body. The third principle is that the mind is a faculty of the soul, and that the soul is a faculty of the body.

The fourth principle is that the mind is a faculty of the soul, and that the soul is a faculty of the body. The fifth principle is that the mind is a faculty of the soul, and that the soul is a faculty of the body. The sixth principle is that the mind is a faculty of the soul, and that the soul is a faculty of the body.

The seventh principle is that the mind is a faculty of the soul, and that the soul is a faculty of the body. The eighth principle is that the mind is a faculty of the soul, and that the soul is a faculty of the body.

SECTION III. THE NATURE OF THE SOUL

The first principle of the theory of the mind is that the mind is a faculty of the soul, and that the soul is a faculty of the body.

The second principle is that the mind is a faculty of the soul, and that the soul is a faculty of the body. The third principle is that the mind is a faculty of the soul, and that the soul is a faculty of the body.

and taste those of Cloves. Specific gravity 1·047 to 1·065; *refractive index* at 25° 1·528 to 1·540. Soluble in 3 parts of *alcohol* (70 per cent.) the solution yielding a blue colour with *T.Sol. of ferric chloride*. When 10 millilitres of the Oil are well shaken with 100 millilitres of *solution of sodium hydroxide*, heated on a water-bath in a flask with narrow graduated neck, and then allowed to stand, the uncombined oil, cooled to 15·5°, measures not more than 1·5 millilitres (presence of not less than 85 per cent. of eugenol).

Dose.

Metric.

3 to 18 centimils.

Imperial. $\frac{1}{2}$ to 3 minims.

OLEUM CHAULMOOGRÆ

Chaulmoogra Oil

Synonym—Gynocardia Oil

Chaulmoogra Oil is the fatty oil expressed from the seeds of *Taraktogenos Kurzii*, *King*.

Characters and Tests.—A brownish-yellow oil or soft fat. Characteristic odour; taste somewhat acrid. Melting point about 22° to 30°. Specific gravity at 45° about 0·940; *saponification value* 198 to 213; *iodine value* 96 to 104; *acid value* 21 to 27. Soluble in *ether*, in *chloroform* and *carbon disulphide*; partially soluble in cold *alcohol* (90 per cent.); almost entirely soluble in hot *alcohol* (90 per cent.)

Dose.

Metric.

3 to 6 decimils,
gradually increased to
2 to 4 mils.

Imperial.

5 to 10 minims,
gradually increased to
 $\frac{1}{2}$ to 1 fluid drachm.

OLEUM CINNAMOMI

Oil of Cinnamon

Oil of Cinnamon is the oil distilled from Cinnamon Bark.

Characters and Tests.—Yellow when freshly distilled, gradually becoming reddish. Odour and taste those of Cinnamon Bark. Specific gravity 1·000 to 1·030; *optical rotation* $-0\cdot5^{\circ}$ to -1° ; *refractive index* at 25° 1·565 to 1·580. Soluble in from 3 to 4 parts of *alcohol* (70 per cent.). 1 drop dissolved in 5 millilitres of *alcohol* (90 per cent.) assumes a pale green, but not a blue or brown coloration on the addition of 1 drop of *T.Sol. of ferric chloride* (absence of cinnamon leaf oil and cassia oil). Contains from 55 to 65 per cent. of cinnamic aldehyde as determined by the following test:—

To 10 millilitres of the Oil add 70 millilitres of a 20 per cent. aqueous solution of *sodium sulphite* and sufficient solution of *phenolphthalein* to give a well marked pink coloration. Heat the mixture on a water-bath, shake well, and neutralise with *acetic acid* diluted with twice its volume of *water*; repeat the heating and neutralisation until no further pink coloration is developed, the time occupied being from thirty to forty-five minutes. The oily layer which separates on standing, cooled to $15\cdot5^{\circ}$, measures not less than 3·5 or more than 4·5 millilitres (presence of 55 to 65 per cent. of cinnamic aldehyde).

Dose.

Metric.
3 to 18 centimils.

Imperial.
 $\frac{1}{2}$ to 3 minims.

OLEUM COPAIBÆ

Oil of Copaiba

Oil of Copaiba is the oil distilled from Copaiba.

Characters and Tests.—Colourless or pale yellow. Odour

and taste those of Copaiba. Specific gravity 0.896 to 0.910; *optical rotation* -7° to -35° ; *refractive index* at 25° 1.494 to 1.500. Distils between 250° and 275° . A solution of 1 millilitre of the Oil in 5 millilitres of *glacial acetic acid* does not develop more than a faint violet coloration on the addition of 4 drops of *nitric acid* (absence of gurjun oil). When distilled in a vacuum the first 10 per cent. of the distillate has an *optical rotation* lower than that of the original Oil (absence of oil of African copaiba).

Dose.

Metric.
3 to 12 decimils.

Imperial.
5 to 20 minims.

OLEUM CORIANDRI

Oil of Coriander

Oil of Coriander is the oil distilled from Coriander Fruit.

Characters and Tests.—Colourless or pale yellow. Odour and taste those of Coriander Fruit. Specific gravity 0.870 to 0.885; *optical rotation* $+8^{\circ}$ to $+14^{\circ}$; *refractive index* at 25° 1.463 to 1.467. Soluble in 3 parts of *alcohol* (70 per cent.)

Dose.

Metric.
3 to 18 centimils.

Imperial.
 $\frac{1}{2}$ to 3 minims.

OLEUM CROTONIS

Croton Oil

Croton Oil is the oil expressed from the seeds of Croton Tiglium, *Linn.*

Characters and Tests.—Brownish-yellow to dark

reddish-brown; viscid, slightly fluorescent. Disagreeable odour; when cautiously tasted, acrid. Blisters skin and mucous membrane. Specific gravity 0.940 to 0.960; *saponification value* 210 to 215; *iodine value* 102 to 106. Freely soluble in *ether* and in *chloroform*. Miscible with half its volume of *absolute alcohol*. Thickens slightly but does not solidify, either completely or partially, when vigorously shaken with half its volume of *fuming nitric acid* and the same proportion of *water* (absence of other non-drying oils).

Dose.

Metric.
3 to 6 centimils.

Imperial.
 $\frac{1}{2}$ to 1 minim.

OLEUM CUBEBAE

Oil of Cubebs

Oil of Cubebs is the oil distilled from Cubebs.

Characters and Tests.—Colourless, pale green or greenish-yellow. Odour and taste those of Cubebs. Specific gravity 0.910 to 0.930; *optical rotation* -25° to -40° ; *refractive index* at 25° 1.486 to 1.500. Not less than 80 per cent. distils between 250° and 280° .

Dose.

Metric.
3 to 12 decimils.

Imperial.
5 to 20 minims.

OLEUM EUCALYPTI

Oil of Eucalyptus

Oil of Eucalyptus is the oil distilled from the fresh leaves of *Eucalyptus Globulus*, *Labill.*, *Eucalyptus dumosa*, *A. Cunn.*, and other species, and rectified.

Characters and Tests.—Colourless or pale yellow.

Aromatic, camphoraceous odour; taste pungent, leaving a sensation of cold. Specific gravity 0.910 to 0.930; *optical rotation* -10° to $+10^{\circ}$. Soluble in 5 parts of *alcohol* (70 per cent.). Contains not less than 55 per cent. by volume of cineol as determined by the process described under '*Oleum Cajuputi*.' When 1 millilitre is mixed with 2 millilitres of *glacial acetic acid* and 5 millilitres of *petroleum spirit*, 2 millilitres of a saturated aqueous solution of *sodium nitrite* being added, and the mixture gently shaken, no crystalline precipitate forms in the upper layer (absence of oils containing much phellandrene).

Dose.

Metric.

3 to 18 centimils.

Imperial. $\frac{1}{2}$ to 3 minims.

OLEUM GAULTHERIÆ

Oil of Gaultheria

Synonym—Oil of Wintergreen

Oil of Gaultheria is the oil distilled from the leaves of *Gaultheria procumbens*, *Linn.*, or from the bark of the sweet birch, *Betula lenta*, *Linn.*

Characters and Tests.—Colourless or nearly colourless. Strong, characteristic odour; taste pungent, Specific gravity 1.180 to 1.187; *optical rotation* at 25° 0° to -1° ; *refractive index* 1.537 to 1.539. Soluble in 6 parts of *alcohol* (70 per cent.) at 25° . Contains not less than 99 per cent. of *esters*, calculated as methyl salicylate, $\text{CH}_3\text{C}_7\text{H}_5\text{O}_2$.

Dose.

Metric.

3 to 10 decimils.

Imperial.

5 to 15 minims.

OLEUM GRAMINIS CITRATI

Oil of Lemon Grass

Oil of Lemon Grass is the oil distilled from *Cymbopogon citratus*, *Stapf*, and *Cymbopogon flexuosus*, *Stapf*.

Characters and Tests.—Dark yellow. Odour resembling that of verbena. Specific gravity 0·880 to 0·905; *optical rotation* -3° to $+3^{\circ}$. Contains not less than 70 per cent. of aldehydes as determined by the process described under 'Oleum Cinnamomi.'

*Dose.**Metric.*

3 to 18 centimils.

Imperial. $\frac{1}{2}$ to 3 minims.

OLEUM JUNIPERI

Oil of Juniper

Oil of Juniper is the oil distilled from the ripe fruit of *Juniperus communis*, *Linn.*, and rectified.

Characters and Tests.—Colourless or pale yellowish-green. Odour that of the fruit; taste warm, aromatic and bitter. Specific gravity 0·862 to 0·890, increasing with age; *optical rotation* -3° to -15° ; *refractive index* at 25° 1·472 to 1·488. Soluble, when freshly distilled, in 4 parts of a mixture of equal volumes of *alcohol* (90 per cent.) and *absolute alcohol*, becoming less soluble with age.

*Dose.**Metric.*

3 to 18 centimils.

Imperial. $\frac{1}{2}$ to 3 minims.

OLEUM LAVANDULÆ

Oil of Lavender

Oil of Lavender is the oil distilled from the flowers of *Lavandula vera*, *DC.*

Characters and Tests.—Pale yellow or yellowish-green. Odour that of the flowers; taste pungent, slightly bitter. Specific gravity 0.883 to 0.900; *optical rotation* -3° to -10° . Soluble in 3 parts of *alcohol* (70 per cent.). Contains from 7 to 11 per cent. of *esters* (English oil), or not less than 30 per cent. of *esters* (foreign oil), calculated as linalyl acetate, $C_{10}H_{17}C_2H_3O_2$.

Dose.

Metric.
3 to 18 centimils.

Imperial.
 $\frac{1}{2}$ to 3 minims.

OLEUM LIMONIS

Oil of Lemon

Oil of Lemon is the oil obtained from fresh Lemon Peel by various methods of expression.

Characters and Tests.—Pale yellow. Volatile; odour that of lemons; taste warm, afterwards slightly bitter. Specific gravity 0.857 to 0.860; *optical rotation* $+58^{\circ}$ to $+64^{\circ}$; *refractive index* at 25° 1.473 to 1.476. Contains not less than 4 per cent. of aldehydes, calculated as citral, as determined by the following process:—

To 20 grammes of the Oil contained in a flask add 20 millilitres of *N/2 solution of hydroxylamine hydrochloride*, 8 millilitres of *N/1 alcoholic solution of potassium hydroxide* and 20 millilitres of *alcohol* (90 per cent.). Attach a reflux condenser, boil for thirty minutes, cool, and dilute with 250

millilitres of *water*, rinsing the condensing tube into the flask with part of this quantity. Neutralise the solution thus obtained with *N/1 alcoholic solution of potassium hydroxide*, *phenolphthalein* being used as indicator, and then titrate with *N/2 solution of sulphuric acid*, *solution of methyl orange* being used as indicator. Repeat the experiment, omitting the Oil of Lemon. The quantity of *N/2 solution of sulphuric acid* required in the second experiment exceeds that required in the first experiment by not less than 10·5 millilitres (presence of not less than 4 per cent. of aldehydes, calculated as citral).

Dose.

Metric.

3 to 18 centimils.

Imperial.

$\frac{1}{2}$ to 3 minims.

OLEUM LINI

Linseed Oil

Linseed Oil is the oil expressed from Linseed.

Characters and Tests.—Yellowish-brown. Characteristic odour; taste bland. Specific gravity 0·930 to 0·940; *saponification value* 187 to 195; *iodine value* not less than 170; *acid value* not more than 3·0; *unsaponifiable matter* not more than 1·0 per cent.; *refractive index* at 40° 1·4725 to 1·4748. Does not congeal at temperatures higher than -20°. Gradually thickens on exposure to the air, forming, when spread in thin layers, a hard transparent varnish. A mixture of 2 millilitres of the Oil with an equal volume of *acetic anhydride*, warmed and shaken, and then cooled to 15·5°, is not coloured violet by the addition of 2 drops of a cooled mixture of 2 parts by weight of *sulphuric acid* and 1 part by weight of *water* (absence of resin and resin oils).

OLEUM MENTHÆ PIPERITÆ

Oil of Peppermint

Oil of Peppermint is the oil distilled from fresh flowering peppermint, *Mentha piperita*, *Sm.*, rectified, if necessary, by redistillation.

Characters and Tests.—Colourless, pale yellow, or greenish-yellow. Odour that of peppermint herb; taste pungent and aromatic, followed by a sensation of cold. Specific gravity 0.900 to 0.920; *optical rotation* — 20° to — 35°. Soluble in 4 parts of *alcohol* (70 per cent.). Contains not less than 50 per cent. of total *alcohols*, free and combined, calculated as menthol, $C_{10}H_{19}OH$, and not less than 5 per cent. of *esters*, calculated as menthyl acetate, $C_{10}H_{19}C_2H_3O_2$.

*Dose.**Metric.*

3 to 18 centimils.

Imperial. $\frac{1}{2}$ to 3 minims.

OLEUM MENTHÆ VIRIDIS

Oil of Spearmint

Oil of Spearmint is the oil distilled from fresh flowering spearmint, *Mentha viridis*, *Linn.*, or *Mentha crispa*, *Roth.*

Characters and Tests.—Colourless, pale yellow, or greenish-yellow, becoming darker on keeping. Odour and taste those of spearmint herb. Specific gravity 0.925 to 0.940; *optical rotation* — 30° to — 50°. Soluble in 3 parts of *alcohol* (90 per cent.). Forms a clear solution with 1 part of a mixture of equal volumes of *alcohol* (90 per cent.) and *alcohol* (70 per cent.), the solution becoming turbid on further dilution.

<i>Dose.</i>	
<i>Metric.</i>	<i>Imperial.</i>
3 to 18 centimils.	$\frac{1}{2}$ to 3 minims.

OLEUM MORRHUÆ

Cod-liver Oil

Cod-liver Oil is the oil expressed from the fresh liver of the cod, *Gadus morrhua*, *Linn.*, at a temperature not exceeding 85°, and from which solid fat has been separated by filtration at about — 5°.

Characters and Tests.—Pale yellow. Slight, fishlike, but not rancid odour; taste bland, fishlike. Specific gravity 0.920 to 0.930; *saponification value* 179 to 192; *iodine value* 155 to 173; *acid value* not more than 2.5; *refractive index* at 40° 1.4704 to 1.4745; *unsaponifiable matter* not more than 1.5 per cent. When exposed for three hours to a temperature of 0°, no solid fat separates.

<i>Dose.</i>	
<i>Metric.</i>	<i>Imperial.</i>
4 to 16 mils.	1 to 4 fluid drachms.

OLEUM MYRISTICÆ

Oil of Nutmeg

Oil of Nutmeg is the oil distilled from Nutmeg, and rectified.

Characters and Tests.—Colourless or pale yellow. Odour and taste those of Nutmeg. Specific gravity 0.870 to 0.925; *optical rotation* + 13° to + 30°; *refractive index* at 25° 1.474 to 1.484. Soluble in 3 parts of *alcohol* (90 per cent.). Leaves not more than 5 per cent. of residue when evaporated on a water-bath.

Dose.

Metric.

3 to 18 centimils.

Imperial.

 $\frac{1}{2}$ to 3 minims.

OLEUM OLIVÆ

Olive Oil

Olive Oil is the oil expressed from the ripe fruit of *Olea europæa*, *Linn.*, and refined.

Characters and Tests.—Pale yellow or greenish-yellow. Faint but not rancid odour; taste bland. Frequently assumes a pasty consistence when maintained for some time at a temperature of 10°, and at a lower temperature may become a soft granular mass. Specific gravity 0.915 to 0.918; *saponification value* 188 to 197; *iodine value* 79 to 87; *acid value* not more than 6.0; *refractive index* at 40° 1.4605 to 1.4635. A mixture of 2 millilitres of the Oil with 1 millilitre of *amylic alcohol* and 1 millilitre of a 1 per cent. solution of *precipitated sulphur* in *carbon disulphide*, placed in a test-tube immersed in boiling water, does not assume a red colour within thirty minutes (absence of cotton seed oil). When a mixture of 2 millilitres of the Oil and 1 millilitre of *hydrochloric acid* containing 1 per cent. of *refined sugar* is shaken for half a minute, and allowed to stand for five minutes, the acid layer does not become pink (absence of sesame oil). When 1 millilitre of the Oil and 15 millilitres of *N/1 alcoholic solution of potassium hydroxide* are boiled for twenty minutes in a flask provided with a reflux condenser, set aside for twenty-four hours at a temperature not exceeding 15.5°, and afterwards heated on a water-bath for three minutes, the solution does not deposit crystals on standing for a further twenty-four hours (absence of arachis oil).

OLEUM PHOSPHORATUM

Phosphorated Oil

Phosphorated Oil contains 1 per cent. by weight of Phosphorus. It should be freshly prepared.

Phosphorus	1 gramme
Almond Oil, previously heated to 150°, cooled and filtered . . .	98 grammes
Oil of Lemon	1 gramme

Add the Phosphorus to the Almond Oil contained in a stoppered bottle capable of holding rather more than the required quantity; warm to about 80°, and shake until the Phosphorus is entirely dissolved; cool, and add the Oil of Lemon.

Characters.—A clear, pale-yellow liquid, phosphorescent in the dark.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
6 to 30 centimils.	1 to 5 minims.

OLEUM RICINI

Castor Oil

Castor Oil is the oil expressed from the seeds of *Ricinus communis*, *Linn.*

Characters and Tests.—Nearly colourless, or with a yellowish tinge, viscid. Liable to solidify at low temperatures. Slight odour; taste at first bland, but afterwards acrid and unpleasant. Specific gravity 0.958 to 0.970; *saponification value* 177 to 187; *iodine value* 83 to 90; *acid value* not more than 4.0; *refractive index* at 40° 1.4695 to 1.4730. Soluble in all proportions of *absolute*

THE UNIVERSITY OF CHICAGO

PHYSICS DEPARTMENT

PHYSICS 309

LECTURE NOTES
BY
PROFESSOR
J. J. THOMSON
OF THE
PHYSICS DEPARTMENT
OF THE UNIVERSITY OF CHICAGO

LECTURE
ON
THE
THEORY
OF
THE
ATOMIC
STRUCTURE
OF
MATTER

LECTURE
ON
THE
THEORY
OF
THE
ATOMIC
STRUCTURE
OF
MATTER

PHYSICS 309

LECTURE
ON
THE
THEORY
OF
THE
ATOMIC
STRUCTURE
OF
MATTER

alcohol, and in 3·5 parts of *alcohol* (90 per cent.). 10 millilitres shaken with 7 millilitres of *petroleum spirit* in a stoppered glass cylinder form a clear mixture at 15·5°; on shaking with a further addition of 3 millilitres of *petroleum spirit* a turbid mixture is formed, which becomes clear when maintained for five minutes at 21°, but again becomes turbid when the temperature falls below 18° (absence of other fixed oils).

*Dose.**Metric.*

4 to 30 mils.

Imperial.

1 to 8 fluid drachms.

OLEUM ROSÆ

Oil of Rose

Synonym—Otto of Rose

Oil of Rose is the oil distilled from the fresh flowers of *Rosa damascena*, *Linn.*

Characters and Tests.—A pale yellow or yellowish-green crystalline mass, semi-solid at ordinary temperatures. Strong, fragrant, rose-like odour; taste sweetish. Specific gravity at 30° (compared with *water* at 15·5°) 0·854 to 0·862; *optical rotation* — 2° to — 4°; *refractive index* at 25° 1·456 to 1·465; melting point 20° to 23°.

OLEUM ROSMARINI

Oil of Rosemary

Oil of Rosemary is the oil distilled from the flowering tops of *Rosmarinus officinalis*, *Linn.*

Characters and Tests.—Colourless or pale yellow. Odour that of rosemary; taste warm, camphoraceous. Specific

gravity 0.895 to 0.920; *optical rotation* — 2° to — 15° ; *refractive index* at 25° 1.463 to 1.473. Soluble in 1 part of *alcohol* (90 per cent.), and in 5 to 10 parts of a mixture of equal volumes of *alcohol* (90 per cent.) and *alcohol* (70 per cent.). Contains not less than 10 per cent. of total *alcohols*, calculated as borneol, $C_{10}H_{18}O$, and not less than 1.8 per cent. of *esters*, calculated as bornyl acetate, $C_{10}H_{17}C_2H_3O_2$.

*Dose.**Metric.*

3 to 18 centimils.

Imperial. $\frac{1}{2}$ to 3 minims.

OLEUM SANTALI

Oil of Sandal Wood

Synonym—Oil of Santal Wood

Oil of Sandal Wood is the oil distilled from the wood of *Santalum album*, *Linn.*

Characters and Tests.—Pale yellow or nearly colourless, somewhat viscid in consistence. Aromatic odour; taste unpleasant. Specific gravity 0.973 to 0.985; *optical rotation* — 13° to — 21° ; *refractive index* at 25° 1.498 to 1.508. Soluble in 6 parts of *alcohol* (70 per cent.) at 20° . Contains not less than 90 per cent. of total *alcohols*, calculated as santalol, $C_{15}H_{24}O$.

*Dose.**Metric.*

3 to 18 decimils.

Imperial.

5 to 30 minims.

OLEUM SESAMI

Sesame Oil

Sesame Oil is the oil expressed from the seeds of *Sesamum indicum*, *Linn.*

Characters and Tests.—Pale yellow. Faint odour; taste

bland. Specific gravity 0.921 to 0.924; *saponification value* 189 to 193; *iodine value* 103 to 114; *acid value* not more than 8; *refractive index* at 40° 1.4650 to 1.4675. When a mixture of 2 millilitres of the Oil and 1 millilitre of *hydrochloric acid* containing 1 per cent. of *refined sugar* is shaken for half a minute, and allowed to stand for five minutes, the acid layer becomes pink. When 1 millilitre of the Oil and 15 millilitres of *N/1 alcoholic solution of potassium hydroxide* are boiled for twenty minutes in a flask provided with a reflux condenser, set aside for twenty-four hours at a temperature not exceeding 15°, and afterwards heated on a water-bath for three minutes, the solution does not deposit crystals on standing for a further twenty-four hours (absence of arachis oil). When 2 millilitres of the Oil are mixed with 1 millilitre of *amylic alcohol* and 1 millilitre of a 1 per cent. solution of *precipitated sulphur* in *carbon disulphide*, and the mixture heated in a test-tube immersed in boiling water, no red colour is developed within fifteen minutes (absence of cotton seed oil).

In India, and in the Eastern, African, and North American Divisions of the Empire, Sesame Oil may be employed in making the official Liniments, Ointments, Plasters, and Soaps for which Olive Oil is directed to be used.

OLEUM SINAPIS VOLATILE

Volatile Oil of Mustard

Volatile Oil of Mustard is the oil obtained by distillation from black mustard seeds, deprived of most of their fixed oil and macerated in water for several hours.

Characters and Tests.—Colourless or pale yellow. Intensely penetrating odour. Produces almost immediate vesication when applied to the skin. Specific gravity

1·014 to 1·025. Distils between 148° and 156°. Contains not less than 92 per cent. of allyl isothiocyanate as determined by the following process :—

With *alcohol* (90 per cent.) prepare a solution of the Oil containing 1 gramme in 50 millilitres. To 5 millilitres of this solution in a 100 millilitre flask add 30 millilitres of *N/10 solution of silver nitrate* and 5 millilitres of *solution of ammonia*. Heat on a water-bath to 80° for thirty minutes, shaking frequently ; cool to 15·5°, make up to exactly 100 millilitres with *water*, and filter. To 50 millilitres of the filtrate add 4 millilitres of *nitric acid*, a few drops of *solution of ferric sulphate*, and sufficient *N/10 solution of ammonium thiocyanate* to produce a permanent red colour. Not more than 5·7 millilitres of the latter reagent are required (presence of not less than 92 per cent. of allyl isothiocyanate).

OLEUM TEREBINTHINÆ RECTIFICATUM

Rectified Oil of Turpentine

Rectified Oil of Turpentine is the oil distilled from the oleo-resin (turpentine) obtained from various species of *Pinus*, rectified by redistillation.

Characters and Tests.—A colourless, limpid liquid. Characteristic odour ; taste pungent, somewhat bitter. Specific gravity 0·860 to 0·870 ; *refractive index* at 25° 1·465 to 1·480. Distils almost entirely between 156° and 180°, leaving no appreciable residue.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
12 to 60 centimils.	2 to 10 minims.
10 to 15 mils	3 to 4 fluid drachms
(anthelmintic).	(anthelmintic).

OLEUM THEOBROMATIS

Oil of Theobroma

Synonym—Cacao Butter

Oil of Theobroma is a solid fat expressed from the seeds of Theobroma Cacao, *Linn.*

Characters and Tests.—A yellowish-white solid, breaking with a smooth fracture. Odour resembling that of cocoa; taste bland, agreeable. Somewhat brittle at ordinary temperatures, but softening at 25°. Specific gravity 0.990 to 0.998; melting point 30° to 33°; *saponification value* 188 to 195; *iodine value* 35.5 to 37.5; *acid value* not more than 2.0; *refractive index* at 40° 1.4565 to 1.4575. In ascertaining the melting point and specific gravity, seventy-two hours should be allowed to elapse between the time of melting and the time of determining the constants. When 1 gramme is dissolved in 3 millilitres of *ether* in a test tube at 17°, and the tube placed in *water* at 0°, the solution neither becomes turbid nor deposits a granular or flaky mass in less than three minutes; and if, after congealing, it is exposed to a temperature of 15.5°, a clear solution is gradually formed (absence of certain other fats).

OLIVERI CORTEX

Oliver's Bark

Synonym—Black Sassafras

Oliver's Bark is the dried bark of *Cinnamomum Oliveri*, *Bailey*.

Characters.—In flat pieces usually about twenty centimetres long, four centimetres wide and one centimetre thick. Cork greyish-brown, very warty. Inner surface umber-brown, satiny. Fracture short, slightly fibrous. In transverse section, umber-brown, a pale line separating the cork from the inner tissues. Aromatic odour; taste aromatic, bitter, camphoraceous.

OPIUM

Opium

Opium is the juice obtained by incision from the unripe capsules of *Papaver somniferum*, *Linn.*, inspissated by spontaneous evaporation.

Any suitable variety of opium may be employed as a source of Tincture of Opium and Extract of Opium, provided that when dry it contains not less than 7·5 per cent. of anhydrous morphine; but, when used for official purposes other than the preparation of the alkaloids or their salts, opium must be of such a strength that when dried, and powdered, the resulting powder dried at 60° yields not less than 9·5 per cent., and not more than 10·5 per cent., of anhydrous morphine. Opium yielding when dried more than 10 per cent. of anhydrous morphine may be diluted to that percentage with powdered Milk Sugar or with any opium containing when dried between 7·5 and 10 per cent. of anhydrous morphine.

Characters.—Usually in rounded, irregularly formed, or flattened masses, varying in weight, but commonly from about 250 to 1000 grammes. When fresh, plastic, and internally somewhat moist, coarsely granular, or nearly smooth, and reddish or chestnut-brown; but becoming harder on keeping, and darkening to blackish-brown. Strong and characteristic odour; taste bitter.

Test.—

Opium, in No. 50 powder, dried

at 60° 8 grammes

Calcium Hydroxide, freshly prepared 2 grammes

Ammonium Chloride 2 grammes

Alcohol (90 per cent.)

Ether

Distilled Water

} of each a sufficient quantity

Triturate together the Opium, *calcium hydroxide*, and 20 millilitres of *water*, in a mortar until a uniform

mixture results; add 60 millilitres of *water* and stir occasionally during half an hour. To 51 millilitres of the filtered liquid (representing 5 grammes of Opium) in a convenient vessel add 5 millilitres of *alcohol* (90 per cent.), and 25 millilitres of *ether*; shake the mixture; add the *ammonium chloride*, shake well and frequently during half an hour; set aside for twelve hours for the morphine to separate. Counterbalance two small filters; place one within the other in a small funnel in such a way that the triple fold of the inner filter shall be superposed upon the single fold of the outer filter; wet them with *ether*; remove the ethereal layer of the liquid in the vessel as completely as possible by means of a small pipette, transferring the liquid to the filter; rinse the vessel with 10 millilitres of *ether*, again transferring the ethereal layer, by means of the pipette, to the filter; wash the filter with a total of 5 millilitres of *ether*, added slowly and in portions. Let the filter dry in the air, and pour upon it the contents of the vessel in portions, in such a way as to transfer the granular crystalline morphine as completely as possible to the filter. When all the liquid has passed through, wash the remainder of the morphine from the vessel with *morphinated water*, until the whole has been removed. Wash the crystals with *morphinated water* until the washings are free from colour; allow the filter to drain, and dry it, first at 60° and finally, for two hours, at 115°. Weigh the crystals in the inner filter, counterbalancing by the outer filter. Dissolve 0.2 gramme of the crystals in 10 millilitres of *N/10 solution of sulphuric acid*, and titrate back with *N/10 solution of sodium hydroxide*, *solution of methyl orange* being used as indicator. Each millilitre of the acid neutralised by the alkaloid corresponds to 0.0285 gramme of pure anhydrous morphine. The weight of pure anhydrous morphine obtained, as indicated by the titration, plus 0.051 gramme, the average loss of morphine during the process, together amount to 0.5 gramme, representing in 100 grammes of the dry powdered Opium 10 grammes of Morphine, calculated as anhydrous. *Limit of error* 0.5 gramme in excess or defect.

*Dose.**Metric.*

3 to 12 centigrams.

Imperial. $\frac{1}{2}$ to 2 grains.

OXYMEL

Oxymel

Acetic Acid	100 millilitres
Distilled Water	100 millilitres
Purified Honey	500 millilitres

Mix.

Tests.—Specific gravity 1·27. 25 grammes require for neutralisation not less than 32 millilitres of *N/2 solution of sodium hydroxide*. The liquid obtained by mixing 25 grammes of Oxymel with 1 millilitre of *solution of lead subacetate*, diluting to 100 millilitres with *water* and adding 1 gramme of *animal charcoal*, and filtering until bright, has an *optical rotation* at a temperature of 15·5° of not more than — 3·9° in a tube 200 millimetres long.

*Dose.**Metric.*

2 to 8 mls.

Imperial. $\frac{1}{2}$ to 2 fluid drachms.

OXYMEL SCILLÆ

Oxymel of Squill

Vinegar of Squill	200 millilitres
Purified Honey	500 millilitres

Mix.

Tests.—Specific gravity 1·20. 25 grammes require for neutralisation not less than 11·9 millilitres of *N/2 solution of sodium hydroxide*. The liquid obtained by mixing 25 grammes of Oxymel of Squill with 1 millilitre of *solution*

of *lead subacetate*, diluting to 100 millilitres with *water*, adding 1 gramme of *animal charcoal*, and filtering until bright, has an *optical rotation* at a temperature of 15.5° of not more than -3.9° in a tube 200 millimetres long.

Dose.

Metric.

2 to 4 mils.

Imperial.

 $\frac{1}{2}$ to 1 fluid drachm.

OXYMEL URGINEÆ

Oxymel of Urginea

Vinegar of Urginea	.	.	.	200 millilitres
Purified Honey	.	.	.	500 millilitres

Mix.

Tests.—Specific gravity 1.29. 25 grammes require for neutralisation not less than 11.9 millilitres of N/2 solution of *sodium hydroxide*. The liquid obtained by mixing 25 grammes of Oxymel of Urginea with 1 millilitre of *solution of lead subacetate*, diluting to 100 millilitres with *water*, adding 1 gramme of *animal charcoal*, and filtering until bright, has an *optical rotation* at a temperature of 15.5° of not more than -3.9° in a tube 200 millimetres long.

Dose.

Metric.

2 to 4 mils.

Imperial.

 $\frac{1}{2}$ to 1 fluid drachm.

PARAFFINUM DURUM

Hard Paraffin

Hard Paraffin is a mixture of solid hydrocarbons.

Characters and Tests.—Colourless, crystalline, more or

less translucent; wax-like, slightly greasy to the touch. No odour or taste. Melting point 59° to 60° . 5 millilitres of *alcohol* (90 per cent.) shaken with 5 grammes of the melted Paraffin do not redden blue *litmus*. 5 grammes, heated, burn with a luminous flame, leaving no appreciable ash.

PARAFFINUM LIQUIDUM

Liquid Paraffin

Liquid Paraffin is a mixture of liquid hydrocarbons.

Characters and Tests.—Transparent, colourless, not fluorescent. No odour or taste. Specific gravity 0.869 to 0.885. A mixture of 4 millilitres of Liquid Paraffin, 2 millilitres of *absolute alcohol*, and 2 drops of a clear saturated solution of *lead oxide* in *solution of sodium hydroxide*, remains colourless when kept at 70° for ten minutes (absence of sulphur compounds). When 3 millilitres are heated with an equal volume of *sulphuric acid* in a test-tube placed in boiling *water* for ten minutes, and frequently shaken, the acid layer, after separation, is not darker than pale-brown. 10 millilitres of *alcohol* (90 per cent.) boiled with 5 millilitres of Liquid Paraffin do not redden blue *litmus*.

Dose.

Metric.

4 to 16 mls.

Imperial.

1 to 4 fluid drachms.

PARAFFINUM MOLLE

Soft Paraffin

Soft Paraffin is a mixture of semi-solid hydrocarbons.

Characters and Tests.—White or yellow, translucent, soft, unctuous to the touch, not allowing any liquid to separ-

ate on keeping. No odour. Melting point 36° to 42° . On heating to 80° no unpleasant odour is evolved. 10 millilitres of *alcohol* (90 per cent.) boiled with 5 grammes of Soft Paraffin do not redden blue *litmus*. When 10 grammes are boiled with 20 millilitres of *solution of sodium hydroxide* for ten minutes and allowed to separate, the aqueous layer yields no precipitate or oily matter when acidified with *sulphuric acid* (absence of fixed oils, fats, and resin). 5 grammes when heated burn with a luminous flame, leaving no appreciable ash.

PARALDEHYDUM

Paraldehyde

Paraldehyde, $C_6H_{12}O_3$, is a product of the polymerisation of acetaldehyde.

Characters and Tests.—A clear, colourless liquid. Characteristic, ethereal odour; taste acrid, afterwards cool. Soluble in 9 parts of *water*; less soluble in hot *water*. Miscible in all proportions with *alcohol* (90 per cent.), and with *ether*. Aqueous solution neutral or only slightly acid to *litmus*. Specific gravity 0.998 to 1.000. Solidifies at a low temperature; melting point not under 10° . Not more than 5 per cent. distils under 123° , and the remainder distils between 123° and 125° . When 5 millilitres are shaken with 5 millilitres of *solution of sodium hydroxide* and allowed to separate, the aqueous layer does not exhibit more than a faint yellow coloration within one hour (limit of acetaldehyde). A 10 per cent. aqueous solution yields no characteristic reaction with the tests for chlorides or for sulphates.

Dose.

Metric.
2 to 8 mls.

Imperial.
 $\frac{1}{2}$ to 2 fluid drachms.

PELLETIERINÆ TANNAS

Pelletierine Tannate

Pelletierine Tannate is a mixture of the tannates of the alkaloids obtained from the bark of the root and stem of *Punica Granatum*, *Linn.*

Characters and Tests.—A light yellow, amorphous powder. Slightly soluble in *water*, more soluble in *alcohol* (90 per cent.). An aqueous solution gives with *T.Sol. of ferric chloride* a bluish-black colour; with *solution of silver nitrate* a brown colour rapidly deepening, with separation of metallic silver; and with *solution of auric chloride* a deep purple colour, with separation of metallic gold. When heated Pelletierine Tannate turns brown at about 150°, softens at about 165°; and at a higher temperature decomposes without melting. No appreciable ash.

*Dose.**Metric.*

12 to 50 centigrams.

Imperial.

2 to 8 grains.

PEPSINUM

Pepsin

Pepsin is an enzyme obtained from the fresh and healthy stomach of the pig, sheep, or calf.

Characters and Test.—A light yellowish-brown powder, or pale yellowish, translucent scales, having a faint odour. Tested as follows it dissolves 2500 times its weight of coagulated white of egg in six hours, the resulting solution being faintly opalescent :—

Prepare some coagulated white of egg by boiling fresh eggs in water for fifteen minutes, immersing them in cold water until cool, separating the whites, at once rubbing these through a hair-sieve having 12 meshes to a centimetre,

and using the product before it has lost moisture by evaporation. Prepare also a Pepsin solution by triturating 0.25 gramme of the Pepsin with 1 gramme of *sodium chloride* in a small mortar until thoroughly mixed, adding by degrees acidified water (prepared by diluting 6.5 millilitres of *hydrochloric acid* to 1000 millilitres with water), continuing the trituration, transferring to a litre flask, washing the mortar with acidified water, and adding the washings to the contents of the flask until 1000 millilitres are produced, then shaking frequently during six hours, and immediately before use. Introduce 20 millilitres of the Pepsin solution so prepared into a 250 millilitre flask. Triturate 12.5 grammes of the freshly prepared coagulated white of egg in a small mortar with 50 millilitres of acidified water until reduced to uniform granules. Transfer to the flask, washing the mortar with a further 50 millilitres of acidified water. Immerse the flask in a water-bath so that its contents are on a lower level than the water in the bath, and digest at a temperature between 40° and 41° for six hours, shaking at intervals of fifteen minutes.

Dose.

Metric.
3 to 6 decigrams.

Imperial.
5 to 10 grains.

PHENACETINUM

Phenacetin

Phenacetin or para-acet-phenetidin, $C_{10}H_{13}NO_2$, may be obtained by the interaction of glacial acetic acid and paraphenetidin.

Characters and Tests.—Small, colourless, glistening, scaly crystals. Inodorous; tasteless. Melting point 135°. Very sparingly soluble in cold water, more freely in boiling water; soluble in 21 parts of alcohol (90 per cent.), the solution being neutral to *litmus*. 0.1 gramme boiled with 2 milli-

litres of *hydrochloric acid* for half a minute yields a liquid which, diluted with 10 times its volume of *water*, cooled and filtered, assumes a deep-red colour on the addition of *solution of chromic acid*. *Sulphuric acid* dissolves Phenacetin without coloration. A cold saturated aqueous solution does not become turbid on the addition of *solution of bromine* (absence of acetanilide). A mixture of 0.3 gramme of Phenacetin with 1 millilitre of *alcohol* (90 per cent.) does not acquire a red tint when diluted with 3 times its volume of *water*, and boiled with 1 drop of *N/10 solution of iodine* (absence of paraphenetidin). No appreciable ash.

Dose.

Metric.

3 to 10 decigrams.

Imperial.

5 to 15 grains.

PHENAZONUM

= antipyrin

Phenazone

Phenazone, or phenyl-dimethyl-iso-pyrazolone, $C_{11}H_{12}N_2O$, may be obtained from phenyl-hydrazine by interaction with aceto-acetic ether, and the subsequent interaction of the resulting phenyl-methyl-iso-pyrazolone with methyl iodide.

Characters and Tests.—Small colourless, scaly crystals. No odour; taste bitter. Soluble in 1.2 parts of *water*, in 1.3 parts of *alcohol* (90 per cent.) and in 1.3 parts of *chloroform*. Melting point from 111° to 113° . Aqueous solution neutral to *litmus*. A 1 per cent. aqueous solution yields the following reactions:—Mixed with an equal volume of *nitric acid* it assumes a yellow colour passing to crimson on warming; 2 millilitres are coloured green by 2 drops of *fuming nitric acid*, and the colour is changed to red by boiling with an additional 3 or 4 drops; 12 millilitres remain nearly colourless on the addition of 0.1 gramme

of *sodium nitrite*, but turn deep green on the further addition of 1 millilitre of *diluted sulphuric acid*; 1 millilitre, diluted with 9 millilitres of *water*, is coloured deep red by *T. Sol. of ferric chloride*, the colour being nearly discharged by excess of *diluted sulphuric acid*. A 5 per cent. aqueous solution gives with *T. Sol. of mercuric chloride* a white precipitate which disappears on boiling, but reappears on cooling. Aqueous solution not affected by *hydrogen sulphide*. No appreciable ash.

Dose.

Metric.

3 to 10 decigrams.

Imperial.

5 to 15 grains.

PHENOLPHTHALEINUM

Phenolphthalein = *Purgan: Laxon*

Phenolphthalein, or dihydroxy-diphenyl-phthalide, $C_{20}H_{14}O_4$, may be obtained by heating phenol with phthalic anhydride and sulphuric acid, and purifying the product.

Characters and Tests.—A white, or yellowish-white, crystalline or amorphous powder. No odour or taste. Soluble in *alcohol* (90 per cent.), the solution being colourless. Almost insoluble in *water*, but soluble in *solution of sodium hydroxide*, forming an intensely red liquid. Melting point 250° to 253° . Not more than 0.1 millilitre of *N/10 solution of sodium hydroxide* is required to produce a red coloration in 250 millilitres of recently boiled and cooled *water* to which 0.5 millilitre of a 1 per cent. solution of Phenolphthalein in *alcohol* (60 per cent.) has been added. No appreciable ash.

Dose.

Metric.

12 to 30 centigrams.

Imperial.

2 to 5 grains.

PHOSPHORUS

Phosphorus

Phosphorus is a solid non-metallic element. It may be obtained from calcium phosphate.

Characters and Tests.—A semi-transparent, waxlike solid, which emits white vapours and is luminous in the dark when exposed to the air. Insoluble in *water*, but soluble in 350 parts of *absolute alcohol*, in 80 parts of *olive oil*, in 80 parts of *ether*, in 25 parts of *chloroform*, and in 0.5 part of *carbon disulphide*. Soft and flexible at ordinary temperatures. Melting point 44° . Ignites in the air at a temperature a little above its melting point, burns with a luminous flame, and produces dense white fumes. 1 gramme is slowly attacked and finally dissolved without residue when boiled with 10 millilitres of *nitric acid* diluted with an equal volume of *water*, and the resulting solution yields not more than the slightest *reactions* for sulphates.

Dose (in pill or solution).

<i>Metric.</i>	<i>Imperial.</i>
0.6 to 2.5 milligrams.	$\frac{1}{100}$ to $\frac{1}{25}$ grain.

PHYSOSTIGMINÆ SULPHAS

Physostigmine Sulphate

Synonym—Eserine Sulphate

Physostigmine Sulphate, $(C_{15}H_{21}N_3O_2)_2.H_2SO_4$, is the sulphate of an alkaloid, physostigmine, obtained from calabar beans.

Characters and Tests.—Minute white crystals, becoming yellowish on exposure to air and light; very deliquescent. Readily soluble in *water*, soluble in *alcohol* (90 per cent.).

Aqueous solution neutral to *litmus*; yields the *reactions* characteristic of sulphates; yields with dilute *solution of sodium hydroxide* a white precipitate turning pink and forming a red solution with excess of the reagent; when mixed with *solution of ammonia* and evaporated to dryness on a water-bath it leaves a bluish residue, the solution of which in very dilute acids is dichroic, being red by reflected and blue by transmitted light. A minute fragment dissolved in a few drops of *fuming nitric acid* forms a yellow liquid, which, on warming on a water-bath, turns orange, then blood-red, and on evaporation to dryness leaves a green residue; this residue turns violet-blue on exposure to the fumes of *nitric acid*; and when moistened with the acid gives gradually a blood-red colour, which changes to greenish-yellow on the addition of *water*. A dilute aqueous solution applied to the eye causes contraction of the pupil. No appreciable ash.

Dose.

Metric.

1 to 2 milligrams.

Imperial. $\frac{1}{64}$ to $\frac{1}{32}$ grain.

PICRORHIZA

Picrorhiza

Picrorhiza is the dried rhizome of *Picrorhiza Kurroa*, *Royle*.

Characters.—In cylindrical pieces two to five centimetres long, and four to eight millimetres thick, sometimes terminating in a scaly leaf-bud or stem; brittle. Cork greyish-brown, wrinkled, with transverse leaf scars and small buds; near the apex with dark scaly leaf-bud or leaves. Fracture short. In transverse section internally dark and porous, with a thin, greyish cork and narrow ring of tangentially elongated wood-bundles. No odour; taste very bitter.

*Dose.**Metric.**Imperial.*

6 to 12 decigrams (tonic).	10 to 20 grains (tonic).
3 to 4 grammes (anti-periodic).	45 to 60 grains (antiperiodic).

PILOCARPINÆ NITRAS

Pilocarpine Nitrate

Pilocarpine Nitrate, $C_{11}H_{16}N_2O_2.HNO_3$, is the nitrate of an alkaloid, pilocarpine, obtained from the leaves of *Pilocarpus microphyllus*, *Stapf*, and other species.

Characters and Tests.—A white crystalline powder. Soluble in 8 parts of *water*. Melting point about 176° . Yields with *sulphuric acid* a colourless solution slowly becoming green on the addition of *potassium bichromate*. When a solution of 0.01 gramme in 5 millilitres of *water* is mixed with 2 drops of *diluted sulphuric acid* and then with 1 millilitre of *solution of hydrogen peroxide*, 1 millilitre of *benzene* and 1 drop of *solution of potassium chromate* and the mixture well shaken and allowed to separate, the benzene is coloured bluish-violet. No appreciable ash.

*Dose.**Metric.**Imperial.*

3 to 12 milligrams.	$\frac{1}{20}$ to $\frac{1}{5}$ grain.
---------------------	--

PILULA ALOES

Aloes Pill

Aloes, in powder		58 grammes
Hard Soap, in powder		29 grammes
Oil of Caraway		3 millilitres
Syrup of Glucose		10 grammes,
		or a sufficient quantity

Mix to form a mass.

*Dose.**Metric.*

25 to 50 centigrams.

Imperial.

4 to 8 grains.

PILULA ALOES ET ASAFETIDÆ**Pill of Aloes and Asafetida**

Aloes, in powder	.	.	.	.	30 grammes
Asafetida	.	.	.	.	30 grammes
Hard Soap, in powder	.	.	.	.	30 grammes
Syrup of Glucose	.	.	.	.	10 grammes,
					or a sufficient quantity

Mix to form a mass.

*Dose.**Metric.*

25 to 50 centigrams.

Imperial.

4 to 8 grains.

PILULA ALOES ET FERRI**Pill of Aloes and Iron**

Exsiccated Ferrous Sulphate	.	.	.	.	10 grammes
Aloes, in powder	.	.	.	.	20 grammes
Compound Powder of Cinnamon	.	.	.	.	35 grammes
Syrup of Glucose	.	.	.	.	35 grammes,
					or a sufficient quantity

Mix to form a mass.

*Dose.**Metric.*

25 to 50 centigrams.

Imperial.

4 to 8 grains.

PILULA ALOES ET MYRRHÆ**Pill of Aloes and Myrrh**

Aloes, in powder	44 grammes
Myrrh, in powder	22 grammes
Syrup of Glucose	34 grammes,
	or a sufficient quantity

Mix to form a mass.

Dose.

Metric.
25 to 50 centigrams.

Imperial.
4 to 8 grains.

PILULA COLOCYNTHIDIS COMPOSITA**Compound Pill of Colocynth**

Colocynth Pulp, in powder	20 grammes
Aloes, in powder	35 grammes
Scammony Resin, in powder	35 grammes
Potassium Sulphate, in powder	5 grammes
Oil of Cloves	5 millilitres
Distilled Water	a sufficient quantity

Triturate the Oil of Cloves with the Potassium Sulphate; add the Colocynth Pulp; mix; add the Aloes and Scammony Resin; mix; add the Distilled Water and mix to form a mass.

Dose.

Metric.
25 to 50 centigrams.

Imperial.
4 to 8 grains.

PILULA COLOCYNTHIDIS ET HYOSCYAMI**Pill of Colocynth and Hyoscyamus**

Compound Pill of Colocynth	50 grammes
Extract of Hyoscyamus	25 grammes

Mix to form a mass.

<i>Dose.</i>	
<i>Metric.</i>	<i>Imperial.</i>
25 to 50 centigrams.	4 to 8 grains.

PILULA FERRI**Iron Pill**

Exsiccated Ferrous Sulphate, in powder	33 grammes
Exsiccated Sodium Carbonate, in powder	21 grammes
Tragacanth, in powder	2 grammes
Gum Acacia, in powder	8 grammes
Glucose	31 grammes
Distilled Water	2 millilitres

Mix the Glucose, Distilled Water and Exsiccated Ferrous Sulphate; add the Exsiccated Sodium Carbonate; mix and set aside for ten minutes, or until the reaction is complete; add the Tragacanth and Gum Acacia, and mix to form a mass.

<i>Dose.</i>	
<i>Metric.</i>	<i>Imperial.</i>
3 to 10 decigrams.	5 to 15 grains.

This Pill contains about 22·5 per cent. of ferrous carbonate.

PILULA HYDRARGYRI**Mercury Pill***Synonym*—Blue Pill

Mercury	40 grammes
Confection of Roses	60 grammes
Liquorice Root, in powder	20 grammes

Triturate the Mercury with the Confection of Roses until metallic globules are no longer visible; add the Liquorice Root; mix to form a mass.

	<i>Dose.</i>	
<i>Metric.</i>		<i>Imperial.</i>
25 to 50 centigrams.		4 to 8 grains.

PILULA HYDRARGYRI SUBCHLORIDI COMPOSITA

Compound Pill of Mercurous Chloride

Synonyms—Compound Calomel Pill: Plummer's Pill

Mercurous Chloride	20 grammes
Sulphurated Antimony	20 grammes
Guaiacum Resin, in powder	40 grammes
Gum Acacia, in powder	1 gramme
Tragacanth, in powder	1 gramme
Syrup of Glucose	10 grammes,
	or a sufficient quantity

Mix to form a mass.

	<i>Dose.</i>	
<i>Metric.</i>		<i>Imperial.</i>
25 to 50 centigrams.		4 to 8 grains.

PILULA IPECACUANHÆ CUM SCILLA

Pill of Ipecacuanha with Squill

Compound Powder of Ipecacuanha	30 grammes
Squill, in powder	10 grammes
Ammoniacum, in powder	10 grammes
Syrup of Glucose	a sufficient quantity

Mix to form a mass.

	<i>Dose.</i>	
<i>Metric.</i>		<i>Imperial.</i>
25 to 50 centigrams.		4 to 8 grains.

This Pill contains about 5 per cent. of Opium.

PILULA IPECACUANHÆ CUM URGINEA**Pill of Ipecacuanha with Urginea**

Compound Powder of Ipecacuanha .	30 grammes
Urginea, dried and in powder .	10 grammes
Ammoniacum, in powder .	10 grammes
Syrup of Glucose	a sufficient quantity

Mix to form a mass.

*Dose.**Metric.*

25 to 50 centigrams.

Imperial.

4 to 8 grains.

This Pill contains about 5 per cent. of Opium.

PILULA PHOSPHORI**Phosphorus Pill**

Phosphorus	1 gramme
Oil of Theobroma	40 grammes
Wool Fat	11 grammes
Kaolin	16 grammes
Sodium Sulphate, dried at 100° .	32 grammes
Carbon Disulphide	20 millilitres

Dissolve the Phosphorus and 20 grammes of the Oil of Theobroma in the Carbon Disulphide. Allow the solution to evaporate in a mortar until a pasty mass is obtained. To this add the remainder of the Oil of Theobroma together with the other ingredients and mix to form a mass.

*Dose.**Metric.*

6 to 25 centigrams,

Imperial.

1 to 4 grains.

This Pill contains 1 per cent. of Phosphorus. It should be freshly prepared.

PILULA PLUMBI CUM OPIO**Pill of Lead with Opium**

Lead Acetate, in powder . . . 80 grammes
Opium, in powder . . . 12 grammes
Syrup of Glucose . . . 8 grammes,
or a sufficient quantity

Mix to form a mass.

*Dose.**Metric.*

12 to 25 centigrams.

Imperial.

2 to 4 grains.

This Pill contains about 12 per cent. of Opium.

PILULA QUININÆ SULPHATIS**Pill of Quinine Sulphate**

Quinine Sulphate . . . 82 grammes
Tartaric Acid, in powder . . . 3 grammes
Glycerin . . . 12 grammes
Tragacanth, in powder . . . 3 grammes

Triturate the Quinine Sulphate with the Tartaric Acid ;
add the product to the previously mixed Glycerin and Tra-
gacanth ; mix to form a mass.

*Dose.**Metric.*

12 to 50 centigrams.

Imperial.

2 to 8 grains.

PILULA RHEI COMPOSITA**Compound Rhubarb Pill**

Rhubarb, in powder	.	.	.	25 grammes
Aloes, in powder	.	.	.	20 grammes
Myrrh, in powder	.	.	.	14 grammes
Hard Soap, in powder	.	.	.	14 grammes
Oil of Peppermint	.	.	.	2 millilitres
Syrup of Glucose	.	.	.	25 grammes,
or a sufficient quantity				

Mix to form a mass.

Dose.

Metric.
25 to 50 centigrams.

Imperial.
4 to 8 grains.

PILULA SAPONIS COMPOSITA**Compound Pill of Soap**

Opium, in powder	.	.	.	20 grammes
Hard Soap, in powder	.	.	.	60 grammes
Syrup of Glucose	.	.	.	20 grammes

Mix to form a mass.

Dose.

Metric.
12 to 25 centigrams.

Imperial.
2 to 4 grains.

This Pill contains 20 per cent. of Opium.

PILULA SCILLÆ COMPOSITA

Compound Squill Pill

Squill, in powder	25 grammes
Ginger, in powder	20 grammes
Ammoniacum, in powder	20 grammes
Hard Soap, in powder	15 grammes
Syrup of Glucose	20 grammes,
or a sufficient quantity	

Mix to form a mass.

*Dose.**Metric.*

25 to 50 centigrams.

Imperial.

4 to 8 grains.

PILULA URGINEÆ COMPOSITA

Compound Urginea Pill

Urginea, dried and in powder	25 grammes
Ginger, in powder	20 grammes
Ammoniacum, in powder	20 grammes
Hard Soap, in powder	15 grammes
Syrup of Glucose	20 grammes,
or a sufficient quantity	

Mix to form a mass.

*Dose.**Metric.*

25 to 50 centigrams.

Imperial.

4 to 8 grains.

PIX CARBONIS PRÆPARATA**Prepared Coal Tar**

Prepared Coal Tar is obtained by maintaining commercial coal tar at a temperature of 50° in a shallow vessel for one hour, stirring frequently.

Characters and Tests.—A nearly black, viscous liquid, brown in very thin layers; heavier than *water*. Strongly empyreumatic characteristic odour. Almost entirely soluble in *benzene* and in *chloroform*; partially soluble in *alcohol* (90 per cent.), and in *ether*; very slightly soluble in *water*.

PIX LIQUIDA**Tar**

Tar is a bituminous liquid, obtained from the wood of *Pinus sylvestris*, *Linn.*, and other species of *Pinus*, by destructive distillation. Known in commerce as Stockholm tar.

Characters and Tests.—Dark brown or nearly black; semi-liquid; characteristic empyreumatic odour; heavier than *water*. *Water* shaken with it acquires a pale-brown colour, sharp empyreumatic taste, and acid reaction; very dilute *T.Sol. of ferric chloride* colours the solution red. Tar is completely soluble in ten times its volume of *alcohol* (90 per cent.).

PLUMBI ACETAS

Lead Acetate

Synonym—Sugar of Lead

Lead Acetate may be obtained by dissolving lead oxide or lead carbonate in acetic acid. It contains not less than 99·5 per cent. of pure lead acetate, $\text{Pb}(\text{C}_2\text{H}_3\text{O}_2)_2, 3\text{H}_2\text{O}$.

Characters and Tests.—Small, white, monoclinic prisms, or crystalline masses, slightly efflorescent. Acetous odour; taste sweet, astringent. Soluble in 2·5 parts of *water*, and in 30 parts of *alcohol* (90 per cent). Aqueous solution slightly acid to *litmus*, clear, or with only a slight turbidity which disappears on the addition of *acetic acid*. Yields the *reactions* characteristic of lead and of acetates. Yields no characteristic *reactions* for silver, copper, arsenic, iron, zinc, calcium, chlorides, or nitrates. When 0·5 gramme is dissolved in *water* acidified with *acetic acid*, excess of *N/1 solution of oxalic acid* added, the precipitate collected, washed, transferred to a flask and decomposed with excess of *diluted sulphuric acid*, the mixture thus obtained, heated to 60° , decolorises not less than 26·2 millilitres of *N/10 solution of potassium permanganate* (presence of not less than 99·5 per cent. of pure lead acetate, $\text{Pb}(\text{C}_2\text{H}_3\text{O}_2)_2, 3\text{H}_2\text{O}$).

Dose.

Metric.

6 to 30 centigrams.

Imperial.

1 to 5 grains.

PLUMBI IODIDUM

Lead Iodide

Lead Iodide, PbI_2 , may be obtained by the interaction of aqueous solutions of lead nitrate or acetate and potassium iodide.

Characters and Tests.—A heavy, bright-yellow powder. Soluble in about 2000 parts of cold water, and in about 200 parts of boiling water, from which it is deposited in golden-yellow crystalline scales as the solution cools; entirely soluble in solution of ammonium chloride. Yields the reactions characteristic of lead and of iodides. Yields no characteristic reactions for nitrates or acetates.

PLUMBI OXIDUM

Lead Oxide

Synonym—Litharge

Lead Oxide, PbO , may be obtained by the action of air on melted lead.

Characters and Tests.—Heavy scales, or powder, of a pale yellowish-red colour. Soluble in diluted nitric acid and in acetic acid with but slight effervescence, leaving not more than traces of insoluble residue. Yields the reactions characteristic of lead. Yields no characteristic reactions for copper, and not more than the slightest reactions for iron.

PODOPHYLLI INDICI RESINA

Indian Podophyllum Resin

Synonym—Podophyllum Emodi Resin

Indian Podophyllum Resin is a powdered resin prepared by the same process as that described under 'Podophylli Resina,' employing Indian Podophyllum Rhizome in place of Podophyllum Rhizome. It possesses characters similar to those described under 'Podophylli Resina.'

Dose.

Metric.
16 to 60 milligrams.

Imperial.
 $\frac{1}{4}$ to 1 grain.

The New York Public Library, Astor Lenox and Tilden Foundations, is pleased to announce that it has acquired a copy of the book "The History of the United States" by John Jay, published in 1790. This book is a valuable addition to the library's collection of early American literature.

THE NEW YORK PUBLIC LIBRARY

ASTOR LENOX AND TILDEN FOUNDATIONS

100 N. 5TH ST. NEW YORK, N. Y.

The New York Public Library, Astor Lenox and Tilden Foundations, is pleased to announce that it has acquired a copy of the book "The History of the United States" by John Jay, published in 1790.

This book is a valuable addition to the library's collection of early American literature. It is a history of the United States, written by John Jay, one of the Founding Fathers of the United States. The book was published in 1790, and it is a very important work in the history of the United States.

THE NEW YORK PUBLIC LIBRARY

ASTOR LENOX AND TILDEN FOUNDATIONS

100 N. 5TH ST. NEW YORK, N. Y.

The New York Public Library, Astor Lenox and Tilden Foundations, is pleased to announce that it has acquired a copy of the book "The History of the United States" by John Jay, published in 1790. This book is a valuable addition to the library's collection of early American literature.

THE NEW YORK PUBLIC LIBRARY
ASTOR LENOX AND TILDEN FOUNDATIONS
100 N. 5TH ST. NEW YORK, N. Y.

PODOPHYLLI INDICI RHIZOMA**Indian Podophyllum Rhizome***Synonym*—Podophyllum Emodi

Indian Podophyllum Rhizome is the dried rhizome and roots of Podophyllum Emodi, *Wall.*

Characters.—Rhizome cylindrical or flattened, contorted, earthy-brown; usually about ten millimetres thick; below with numerous root-scars, or with stout roots, and crowned with the short remains of aerial stems, bearing cup-shaped scars. In transverse section, pale-brown and starchy or horny, with a ring of radially elongated vascular bundles. Slight odour; taste bitter and acrid.

PODOPHYLLI RESINA**Podophyllum Resin**

Podophyllum Rhizome, in No. 40

powder.	.	.	.	.	1000 grammes
Alcohol (90 per cent.)	}	of each a sufficient quantity			
Distilled Water					
Hydrochloric Acid					

Exhaust the Podophyllum with the Alcohol by percolation; recover the greater part of the alcohol by distillation; pour the resulting liquid into eight times its volume of Distilled Water acidified with one twenty-fourth of its volume of Hydrochloric Acid, constantly stirring; after twenty-four hours collect the deposited resin, wash with Distilled Water, and dry at a temperature not exceeding 40°.

Characters and Tests.—An amorphous powder, varying in colour from pale yellow to deep orange-brown. Taste bitter. Entirely or almost entirely soluble in alcohol (90

THE NEW YORK PUBLIC LIBRARY

ASTOR LENOX TILDEN FOUNDATION

1009 Broadway, New York

THE NEW YORK PUBLIC LIBRARY
ASTOR LENOX TILDEN FOUNDATION
1009 Broadway, New York

THE NEW YORK PUBLIC LIBRARY
ASTOR LENOX TILDEN FOUNDATION
1009 Broadway, New York

THE NEW YORK PUBLIC LIBRARY

ASTOR LENOX TILDEN FOUNDATION

1009 Broadway, New York

THE NEW YORK PUBLIC LIBRARY
ASTOR LENOX TILDEN FOUNDATION
1009 Broadway, New York

THE NEW YORK PUBLIC LIBRARY
ASTOR LENOX TILDEN FOUNDATION
1009 Broadway, New York

THE NEW YORK PUBLIC LIBRARY
ASTOR LENOX TILDEN FOUNDATION
1009 Broadway, New York

per cent.) and in *solution of ammonia*; precipitated from the former solution by *water*, from the latter by acids. Partly soluble in *ether*. Ash not more than 1 per cent.

Dose.

Metric.
16 to 60 milligrams.

Imperial.
 $\frac{1}{4}$ to 1 grain.

PODOPHYLLI RHIZOMA

Podophyllum Rhizome

Synonym—Podophyllum Root

Podophyllum Rhizome is the dried rhizome and roots of *Podophyllum peltatum*, *Linn.*

Characters.—Rhizome nearly cylindrical, of very variable length, usually about five millimetres thick; dark reddish-brown, smooth or only slightly wrinkled; enlarged at intervals of about five centimetres, the upper surface of each enlargement being marked by a depressed circular scar, below which, on the under surface, are rather stout, brittle, brown roots, or the scars corresponding to them. In transverse section, either nearly white and starchy, or pale yellowish-brown and horny. Characteristic odour; taste slightly bitter and acrid.

POTASSA CAUSTICA

Potassium Hydroxide

Synonym—Caustic Potash

Potassium Hydroxide may be obtained by the interaction of potassium carbonate and calcium hydroxide. It contains not less than 85 per cent. of pure potassium hydroxide, KOH.

*

Characters and Tests.—In hard white pencils or cakes, very deliquescent, very alkaline and corrosive. Soluble in 0·5 part of *water*, and in 3 parts of *alcohol* (90 per cent.). Yields the *reactions* characteristic of potassium. 1 gramme dissolved in *water* or in *alcohol* (90 per cent.) leaves only a slight sediment, and requires for neutralisation not less than 15·1 millilitres of *N/1 solution of sulphuric acid*. Yields no characteristic *reactions* for lead, copper, or arsenic.

POTASSA SULPHURATA

Sulphurated Potash

Synonym—Liver of Sulphur

Sulphurated Potash is a mixture of salts of potassium, chiefly sulphides.

Potassium Carbonate, in powder	. 100 grammes
Sublimed Sulphur	50 grammes

Mix the Potassium Carbonate, previously dried, with the Sulphur; heat in a covered crucible, at first gently, afterwards to dull redness, until effervescence ceases and the mass fuses; pour it on to a clean flagstone, and, after solidification, break it into fragments and transfer to a stoppered bottle.

Characters and Tests.—Solid fragments, externally greenish-yellow, internally pale liver-brown, rapidly changing to greenish-yellow on exposure to the air. Odour that of hydrogen sulphide; taste alkaline and acrid. Readily soluble in *water*. Aqueous solution yellowish, opalescent; deposits only a trace of sediment on standing; evolves hydrogen sulphide freely on the addition of excess of *hydrochloric acid*, sulphur being deposited. This acid liquid, boiled and filtered, gives a yellow precipitate with *solution of platinic chloride*. Sulphurated Potash contains not less than 42 and not more than 45 per cent. of sulphur as determined by the following process:—

Dissolve 0.2 gramme in 10 millilitres of *water* in a small flask, add 5 millilitres of *solution of sodium hydroxide*, heat the liquid to boiling, and add slowly, the flask being constantly rotated, *solution of bromine As T.* until a clear solution is obtained and bromine is present in excess. Acidify with *hydrochloric acid*, boil until the excess of bromine is driven off, add excess of *solution of barium chloride*, collect the precipitate formed, wash, dry, ignite, and weigh. It weighs not less than 0.611 or more than 0.655 gramme.

POTASSII ACETAS

Potassium Acetate

Potassium Acetate may be obtained by fusing the product of the interaction of acetic acid and potassium carbonate. It contains not less than 90 per cent. of pure potassium acetate, $\text{KC}_2\text{H}_3\text{O}_2$.

Characters and Tests.—White foliaceous satiny masses, or in granules. Taste sharp, saline. Very deliquescent. Soluble in 0.5 part of *water*, and in 2 parts of *alcohol* (90 per cent.) Aqueous solution alkaline to *litmus*. Yields the *reactions* characteristic of potassium and of acetates. Yields no characteristic *reactions* for copper, iron, aluminium, calcium, magnesium, carbonates, or sulphides, and not more than the slightest *reactions* for chlorides or sulphates. *Lead limit* 10 parts per million. *Arsenic limit* 5 parts per million. Loses not more than 10 per cent. of its weight when dried at 100° . 1 gramme heated to redness until gases cease to be evolved leaves an alkaline residue which, when treated with *water*, filtered, and well washed, yields a clear solution requiring for neutralisation not less than 18.3 millilitres of *N/2 solution of sulphuric acid*.

Dose.

Metric.

1 to 4 grammes.

Imperial.

15 to 60 grains.

POTASSII BICARBONAS

Potassium Bicarbonate

Potassium Bicarbonate may be obtained by saturating a strong aqueous solution of potassium carbonate with carbonic anhydride. It contains not less than 99 per cent. of pure potassium bicarbonate, KHCO_3 .

Characters and Tests.—Colourless, monoclinic, non-deliquescent prisms. Taste saline, feebly alkaline. Soluble in 4 parts of *water*, almost insoluble in *alcohol* (90 per cent.). Yields the *reactions* characteristic of potassium and of bicarbonates. 1 gramme exposed to a low red heat leaves not less than 0.683 or more than 0.690 gramme of a white residue, which requires for neutralisation not less than 19.8 or more than 20 millilitres of *N/2 solution of sulphuric acid*. Yields no characteristic *reactions* for copper, sulphates, or sodium, and not more than the slightest *reactions* for iron or chlorides. *Lead limit* 5 parts per million. *Arsenic limit* 5 parts per million.

20 parts by weight of Potassium Bicarbonate are neutralised by 14 parts of Citric Acid, and by 15 parts of Tartaric Acid.

*Dose.**Metric.*

3 to 20 decigrams.

Imperial.

5 to 30 grains.

POTASSII BICHROMAS

Potassium Bichromate

Synonym—Potassium Dichromate

Potassium Bichromate may be obtained by roasting chrome ironstone with lime in the presence of air, and treating the resulting chromate with a potassium salt, and subsequently with an acid. It contains not less than 99 per cent. of pure potassium bichromate, $\text{K}_2\text{Cr}_2\text{O}_7$.

Characters and Tests.—Large orange-red crystals. Soluble in 10 parts of *water*. Aqueous solution acid to *litmus*; gives a yellowish-white precipitate with *solution of barium chloride*; acquires an emerald-green colour when warmed with *sulphuric acid* and *alcohol* (90 per cent.). When 0.1 gramme is dissolved in 20 millilitres of *water* acidified with 5 millilitres of *diluted sulphuric acid*, and then 2 grammes of *potassium iodide* added, the solution thus obtained, diluted with *water*, requires for decolorisation not less than 20.1 millilitres of *N/10 solution of sodium thiosulphate*, *mucilage of starch* being used as indicator (presence of not less than 99 per cent. of pure potassium bichromate, $K_2Cr_2O_7$).

Dose.

Metric.
6 to 12 milligrams.

Imperial.
 $\frac{1}{10}$ to $\frac{1}{5}$ grain.

POTASSII BROMIDUM

Potassium Bromide

Potassium Bromide may be obtained by the interaction of ferrous bromide with potassium carbonate. When dried at 100° it contains not less than 98 per cent. of pure potassium bromide, KBr.

Characters and Tests.—Colourless, cubical crystals. No odour; taste pungent and saline. Soluble in 2 parts of *water*, and in 200 parts of *alcohol* (90 per cent.). Yields the *reactions* characteristic of potassium and of bromides. Loses not more than 1 per cent. of its weight when dried at 100° ; 0.5 gramme of this dried salt requires for complete precipitation not less than 41.2, or more than 42.5 millilitres of *N/10 solution of silver nitrate*. Yields no characteristic *reactions* for copper, iron, barium, calcium, magnesium, carbonates, bromates, or iodates, and not more than the slightest *reactions* for iodides or sulphates. *Lead limit* 10 parts per million. *Arsenic limit* 5 parts per million.

*Dose.**Metric.*

3 to 20 decigrams.

Imperial.

5 to 30 grains.

POTASSII CARBONAS

Potassium Carbonate

Potassium Carbonate may be obtained by the interaction of potassium sulphate and calcium carbonate. It contains not less than 81·5 per cent. of pure potassium carbonate, K_2CO_3 .

Characters and Tests.—A white crystalline powder, very deliquescent. Taste alkaline and caustic. Soluble in 1 part of *water*; insoluble in *alcohol* (90 per cent.). Yields the *reactions* characteristic of potassium and of carbonates. 1 gramme requires for neutralisation not less than 11·8 millilitres of *N/1 solution of sulphuric acid*. Loses not more than 18·5 per cent. of its weight when exposed to a red heat. Yields no characteristic *reactions* for copper, aluminium, calcium, magnesium, sodium, cyanides, nitrates, sulphates, sulphides, or thiosulphates, not more than the slightest *reactions* for iron, and no strongly marked *reactions* for chlorides. *Lead limit* 5 parts per million. *Arsenic limit* 2 parts per million.

*Dose.**Metric.*

3 to 12 decigrams.

Imperial.

5 to 20 grains.

POTASSII CHLORAS

Potassium Chlorate

Potassium Chlorate, $KClO_3$, may be obtained by passing chlorine into water holding lime or magnesia in suspension, treating the clarified liquid with potassium chloride, and subsequently crystallising out the potassium chlorate.

Characters and Tests.—Colourless monoclinic crystals. Taste cool, saline. Soluble in 16 parts of *water*. Moistened with *hydrochloric acid* it evolves a yellow gas with an odour of chlorine. Yields no characteristic *reactions* for iron, calcium, magnesium, sodium, ammonium, or nitrates, and not more than the slightest *reactions* for chlorides or sulphates. *Lead limit* 10 parts per million. *Arsenic limit* 5 parts per million.

Dose.

Metric.
3 to 10 decigrams.

Imperial.
5 to 15 grains.

POTASSII CITRAS

Potassium Citrate

Potassium Citrate may be obtained by the interaction of citric acid and potassium carbonate. It contains not less than 99 per cent. of pure potassium citrate, $K_3C_6H_5O_7 \cdot H_2O$.

Characters and Tests.—A white, granular, or crystalline powder. Taste saline, feebly acid. Soluble in 1 part of *water*. Yields the *reactions* characteristic of potassium and of citrates. 1 gramme, heated to redness till gases cease to be evolved, leaves an alkaline residue which, when treated with *water*, filtered and well washed, yields a clear solution requiring for neutralisation not less than 18.3 millilitres of *N/2 solution of sulphuric acid*. Yields no characteristic *reactions* for iron, calcium, magnesium, sodium, carbonates, or tartrates, and not more than the slightest *reactions* for chlorides or sulphates. *Lead limit* 10 parts per million. *Arsenic limit* 2 parts per million.

Dose.

Metric.
1 to 4 grammes.

Imperial.
15 to 60 grains.

POTASSII IODIDUM

Potassium Iodide

Potassium Iodide may be obtained by adding a slight excess of iodine to a strong solution of potassium hydroxide, evaporating to dryness, fusing with charcoal, and purifying by crystallisation. When dried at 100° it contains not less than 99 per cent. of pure potassium iodide, KI.

Characters and Tests.—Colourless, generally opaque, cubic crystals. Taste saline, slightly bitter. Soluble in less than 1 part of *water*, and in 12 parts of *alcohol* (90 per cent.). It usually has a feebly alkaline reaction. Yields the *reactions* characteristic of potassium and of iodides. Loses not more than 1 per cent. of its weight when dried at 100° ; 0.5 gramme of this dried salt requires for complete precipitation not less than 29.8 or more than 30.5 millilitres of *N/10 solution of silver nitrate*. Yields no characteristic *reactions* for copper, iron, aluminium, calcium, magnesium, bromates, cyanides, or nitrates, and not more than the slightest *reactions* for bromides, iodates, carbonates, or sulphates. *Lead limit* 10 parts per million. *Arsenic limit* 5 parts per million.

*Dose.**Metric.*

3 to 12 decigrams.

Imperial.

5 to 20 grains.

POTASSII NITRAS

Potassium Nitrate

Synonym—Purified Nitre

Potassium Nitrate, KNO_3 , may be obtained by the interaction of sodium nitrate and potassium chloride.

Characters and Tests.—White crystalline masses, or

colourless fragments of six-sided rhombic prisms. Taste cool, saline. Soluble in 4 parts of *water*. Yields the *reactions* characteristic of potassium and of nitrates. Yields no characteristic *reactions* for copper, iron, aluminium, zinc, calcium, magnesium, sodium, ammonium, chlorides, iodides, or sulphates. *Lead limit* 10 parts per million. *Arsenic limit* 5 parts per million.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
3 to 12 decigrams.	5 to 20 grains.

POTASSII PERMANGANAS

Potassium Permanganate

Potassium Permanganate may be obtained by the interaction of potassium chlorate, potassium hydroxide, and manganese dioxide. It contains not less than 99 per cent. of pure potassium permanganate, KMnO_4 .

Characters and Tests.—Dark purple, slender, prismatic, iridescent crystals. Taste sweet, astringent. Soluble in 20 parts of *water*. Aqueous solution neutral to *litmus*. The crystals heated to redness decrepitate, evolve oxygen, and leave a black residue from which *water* extracts potassium hydroxide, the resulting solution yielding the *reactions* characteristic of potassium. Yields no characteristic *reactions* for lead, arsenic, iron, sodium, ammonium, chlorides, nitrates, or sulphates. 1 gramme dissolved in *water*, acidified with 5 millilitres of *diluted sulphuric acid*, and heated to about 60° , requires for complete decolorisation not less than 31.3 millilitres of *N/1 solution of oxalic acid*.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
6 to 20 centigrams.	1 to 3 grains.

POTASSII SULPHAS

Potassium Sulphate

Potassium Sulphate may be obtained by the interaction of sulphuric acid and potassium chloride or certain other potassium salts. It contains not less than 99 per cent. of pure potassium sulphate, K_2SO_4 .

Characters and Tests.—Colourless, hard rhombic prisms terminated by six-sided pyramids. Taste saline, slightly bitter. Decrepitates strongly when heated. Soluble in 10 parts of *water*; insoluble in *alcohol* (90 per cent.). Yields the *reactions* characteristic of potassium and of sulphates. 1 gramme dissolved in *water* acidified with *hydrochloric acid* gives, with *solution of barium chloride*, a white precipitate, which, when washed and dried, weighs not less than 1.326 grammes. Yields no characteristic *reactions* for copper, iron, calcium, magnesium, sodium, ammonium, or nitrates, and not more than the slightest *reactions* for chlorides. *Lead limit* 20 parts per million. *Arsenic limit* 5 parts per million. Aqueous solution neutral to *litmus* (absence of acid potassium sulphate).

*Dose.**Metric.*

1 to 3 grammes.

Imperial.

15 to 45 grains.

POTASSII TARTRAS

Potassium Tartrate

Potassium Tartrate may be obtained by neutralising Acid Potassium Tartrate with potassium carbonate. It contains not less than 99 per cent. of pure potassium tartrate, $K_2C_4H_4O_6, \frac{1}{2}H_2O$.

Characters and Tests.—Small, colourless, four or six-

sided prisms. Taste saline, cooling. Soluble in 1 part of *water*. Yields the *reactions* characteristic of potassium and of tartrates. 1 gramme, heated to redness till gases cease to be evolved, leaves an alkaline residue which, when treated with *water*, filtered, and well washed, yields a clear solution requiring for neutralisation not less than 16·8 millilitres of *N/2 solution of sulphuric acid*. Yields no characteristic *reactions* for copper, or iron, and not more than the slightest *reactions* for calcium, magnesium, sodium, chlorides, or sulphates. *Lead limit* 10 parts per million. *Arsenic limit* 2 parts per million. Aqueous solution neutral to *litmus* (absence of acid potassium tartrate).

Dose.

Metric.

2 to 16 grammes.

Imperial.

30 to 240 grains.

POTASSII TARTRAS ACIDUS

Acid Potassium Tartrate

Synonym—Purified Cream of Tartar

Acid Potassium Tartrate may be obtained from the crude cream of tartar deposited during the fermentation of grape juice. It contains not less than 99 per cent. of potassium hydrogen tartrate, $\text{KHC}_4\text{H}_4\text{O}_6$.

Characters and Tests.—A gritty white powder, or fragments of crystalline cakes. Taste acid. Soluble in 220 parts of *water*; insoluble in *alcohol*. Yields the *reactions* characteristic of potassium and of tartrates. 1 gramme requires for neutralisation not less than 10·5 millilitres of *N/2 solution of sodium hydroxide*. Yields no characteristic *reactions* for copper, or iron, and not more than the slightest *reactions* for calcium, magnesium, sodium, chlorides, or sulphates. *Lead limit* 5 parts per million. *Arsenic limit* 2 parts per million.

*Dose.**Metric.*

1 to 4 grammes.

Imperial.

15 to 60 grains.

PRUNI VIRGINIANÆ CORTEX**Wild Cherry Bark***Synonym*—Virginian Prune Bark

Wild Cherry Bark is the bark of *Prunus serotina*, *Ehrh.*, collected in autumn.

Characters.—In curved pieces or irregular fragments not more than three millimetres thick. Frequently covered with a smooth, thin, reddish-brown, papery cork, or, if this has been removed, exhibiting a greenish-brown cortex; marked with transversely elongated lenticels. Fracture short, granular; fractured surface reddish-grey. Inner surface reddish-brown, striated or reticulately fissured. In the bark numerous groups of sclerenchymatous cells of characteristic shape, but no typical bast fibres; in the parenchymatous cells minute starch grains and numerous prismatic crystals of calcium oxalate. Slight odour; taste astringent, aromatic and bitter, recalling that of bitter almonds.

PTEROCARPI LIGNUM**Red Sanders Wood***Synonym*—Red Sandal-Wood

Red Sanders Wood is the heart-wood of *Pterocarpus santalinus*, *Linn. f.*

Characters.—Imported in irregular logs or billets, freed from the pale sapwood; reddish-brown or blackish-brown externally, deep blood-red internally; hard, but easily split longitudinally. In transverse section, narrow, closely

approximated, reddish medullary rays traversing a nearly black wood with scattered, large, isolated vessels. Colouring matter readily soluble in *alcohol* (90 per cent.), but almost insoluble in *water*. Odour of the warmed Wood faintly aromatic; taste very slightly astringent.

PULVIS AMYGDALÆ COMPOSITUS

Compound Powder of Almonds

Sweet Almonds	60 grammes
Refined Sugar, in powder	30 grammes
Gum Acacia, in powder	10 grammes

Blanch and dry the Almonds; reduce them to a coarse powder; mix the Gum Acacia and Sugar; add to the powdered Almonds; mix.

PULVIS ANTIMONIALIS

Antimonial Powder

Antimonious Oxide	25 grammes
Calcium Phosphate	50 grammes

Mix.

Dose.

Metric.

2 to 4 decigrams.

Imperial.

3 to 6 grains.

PULVIS BUTEÆ SEMINUM

Powder of Butea Seeds

Soak Butea Seeds in Distilled Water; carefully remove the integuments; dry and powder the kernels.

Dose.

Metric.

6 to 12 decigrams.

Imperial.

10 to 20 grains.

PULVIS CATECHU COMPOSITUS**Compound Powder of Catechu**

Catechu, in powder	40 grammes
Kino, in powder	20 grammes
Krameria Root, in powder	20 grammes
Cinnamon Bark, in powder	10 grammes
Nutmeg, in powder	10 grammes

Mix.

*Dose.**Metric.*

6 to 40 decigrams.

Imperial.

10 to 60 grains.

PULVIS CINNAMOMI COMPOSITUS**Compound Powder of Cinnamon***Synonym*—Pulvis Aromaticus

Cinnamon Bark, in powder	25 grammes
Cardamom Seeds, in powder	25 grammes
Ginger, in powder	25 grammes

Mix.

*Dose.**Metric.*

6 to 40 decigrams.

Imperial.

10 to 60 grains.

PULVIS CRETÆ AROMATICUS**Aromatic Powder of Chalk**

Cinnamon Bark, in powder	10 grammes
Nutmeg, in powder	8 grammes
Cloves, in powder	4 grammes
Cardamom Seeds, in powder	3 grammes
Refined Sugar, in powder	50 grammes
Prepared Chalk	25 grammes

Mix.

	<i>Dose.</i>	
<i>Metric.</i>		<i>Imperial.</i>
6 to 40 decigrams.		10 to 60 grains.

PULVIS CRETÆ AROMATICUS CUM OPIO

Aromatic Powder of Chalk with Opium

Aromatic Powder of Chalk . . .	97·5 grammes
Opium, in powder . . .	2·5 grammes

Mix.

	<i>Dose.</i>	
<i>Metric.</i>		<i>Imperial.</i>
6 to 40 decigrams.		10 to 60 grains.

This Powder contains 2·5 per cent. of Opium.

PULVIS GLYCYRRHIZÆ COMPOSITUS

Compound Powder of Liquorice

Senna, in powder	16 grammes
Liquorice Root, in powder	16 grammes
Fennel Fruit, in powder	8 grammes
Sublimed Sulphur	8 grammes
Refined Sugar, in powder	52 grammes

Mix.

	<i>Dose.</i>	
<i>Metric.</i>		<i>Imperial.</i>
4 to 8 grammes.		60 to 120 grains.

PULVIS IPECACUANHÆ COMPOSITUS**Compound Powder of Ipecacuanha***Synonym*—Dover's Powder

Ipecacuanha Root, in powder . . .	10 grammes
Opium, in powder	10 grammes
Potassium Sulphate, in powder . . .	80 grammes

Mix.

*Dose.**Metric.*

3 to 10 decigrams.

Imperial.

5 to 15 grains.

This Powder contains 10 per cent. of Opium.

PULVIS JALAPÆ COMPOSITUS**Compound Powder of Jalap**

Jalap, in powder	30 grammes
Acid Potassium Tartrate, in powder .	60 grammes
Ginger, in powder	10 grammes

Mix.

*Dose.**Metric.*

6 to 40 decigrams.

Imperial.

10 to 60 grains.

PULVIS KALADANÆ COMPOSITUS**Compound Powder of Kaladana**

Kaladana, in powder	30 grammes
Acid Potassium Tartrate, in powder .	60 grammes
Ginger, in powder	10 grammes

Mix.

	<i>Dose.</i>
<i>Metric.</i>	<i>Imperial.</i>
6 to 40 decigrams,	10 to 60 grains.

PULVIS KINO COMPOSITUS

Compound Powder of Kino

Kino, in powder	75 grammes
Opium, in powder	5 grammes
Cinnamon Bark, in powder	20 grammes

Mix.

	<i>Dose.</i>
<i>Metric.</i>	<i>Imperial.</i>
3 to 12 decigrams.	5 to 20 grains.

This Powder contains 5 per cent. of Opium.

PULVIS OPII COMPOSITUS

Compound Powder of Opium

Opium, in powder	10 grammes
Black Pepper of commerce, in powder	15 grammes
Ginger, in powder	30 grammes
Caraway Fruit, in powder	42 grammes
Tragacanth, in powder	3 grammes

Mix.

	<i>Dose.</i>
<i>Metric.</i>	<i>Imperial.</i>
3 to 10 decigrams.	5 to 15 grains.

This Powder contains 10 per cent. of Opium.

PULVIS RHEI COMPOSITUS**Compound Powder of Rhubarb***Synonym*—Gregory's Powder

Rhubarb Root, in powder	.	.	22 grammes
Light Magnesia	.	.	66 grammes
Ginger, in powder	.	.	12 grammes

Mix.

Dose.

Metric.
6 to 40 decigrams.

Imperial.
10 to 60 grains.

PULVIS SCAMMONIÆ COMPOSITUS**Compound Powder of Scammony**

Scammony Resin, in powder	.	.	50 grammes
Jalap, in powder	.	.	35 grammes
Ginger, in powder	.	.	15 grammes

Mix.

Dose.

Metric.
6 to 12 decigrams.

Imperial.
10 to 20 grains.

PULVIS SODÆ TARTARATÆ EFFERVESCENS**Effervescent Tartarated Soda Powder***Synonym*—Seidlitz Powder

No. (1) Sodium Potassium Tartrate,			
in dry powder	.	.	7.5 grammes
Sodium Bicarbonate, in dry			
powder	.	.	2.5 grammes

Mix.

No. (2) Tartaric Acid, in dry
powder 2·5 grammes

Put No. (1) in blue paper, and put No. (2) in white paper.

Dose (single).

No. (1) dissolved in cold or warm water, and No. (2) then added.

PULVIS TRAGACANTHÆ COMPOSITUS

Compound Powder of Tragacanth

Tragacanth, in powder	15 grammes
Gum Acacia, in powder	20 grammes
Starch, in powder	20 grammes
Refined Sugar, in powder	45 grammes

Mix.

Dose.

Metric.
6 to 40 decigrams.

Imperial.
10 to 60 grains.

PYRETHRI RADIX

Pyrethrum Root

Pyrethrum Root is the dried root of *Anacyclus Pyrethrum*, DC.

Characters.—Usually from five to ten centimetres long, and from ten to fifteen millimetres thick; unbranched, nearly cylindrical, or frequently tapering towards both extremities; the crown often bearing a tuft of nearly colourless hairs. Outer surface brown and longitudinally wrinkled. Fracture short. In transverse section, numerous, narrow, yellowish wood-bundles alternating with wider, brownish-grey medullary rays; in the cortex and

medullary rays scattered, yellowish-brown oleo-resin ducts ;
in the parenchymatous tissue inulin, but no starch. Char-
acteristic odour ; taste pungent, salivant.

PYROXYLINUM

Pyroxylin

= Di-nitro-cellulose

Cotton	10 grammes
Sulphuric Acid	50 millilitres
Nitric Acid	50 millilitres
Distilled Water	a sufficient quantity

Mix the Acids in a porcelain mortar ; immerse the Cotton in the mixture, and after it is thoroughly wetted by the Acids stir it for three minutes with a glass rod ; transfer it to Distilled Water, wash until free from acid, drain, and dry the Pyroxylin in a warm room.

Characters and Test.—Resembles cotton-wool, but is somewhat harsher to the touch. Highly inflammable. Readily soluble in a mixture of equal volumes of alcohol (90 per cent.) and ether (distinction from gun-cotton.) ✓

tri-nitro-cellulose

QUASSIÆ LIGNUM

Quassia Wood

Quassia Wood is the wood of the trunk and branches of *Picræna excelsa*, *Link.*

Characters.—In logs of varying length, or in chips or raspings ; yellowish white, tough and dense, but easily split. In longitudinal section, elongated cells containing single crystals of calcium oxalate ; in transverse section, medullary rays mostly two or three cells wide. No odour ; taste intensely bitter.

QUILLAIAE CORTEX

Quillaia Bark

Quillaia Bark is the dried inner part of the bark of *Quillaja Saponaria*, *Molina*.

Characters and Test.—In flat pieces, from three to eight millimetres thick, but varying considerably in length and width. Outer surface brownish-white, or, where the outer bark has been imperfectly removed, reddish or blackish-brown, and longitudinally striated. Inner surface white or yellowish-white and smooth. Fracture splintery and laminated, the tangential surfaces of the laminæ often exhibiting glistening prismatic crystals of calcium oxalate. In transverse section, chequered with delicate radial and tangential lines; medullary rays four cells wide; numerous irregular groups of bast fibres of very varying size; scattered starch grains from four to six microns in diameter. Powdered Quillaia Bark extremely sternutatory; *water* vigorously shaken with it froths abundantly. Odour not marked; taste astringent and acrid. Ash not more than 15 per cent.

QUININÆ HYDROCHLORIDUM

Quinine Hydrochloride

Quinine Hydrochloride, $C_{20}H_{24}N_2O_2 \cdot HCl \cdot 2H_2O$, is the hydrochloride of an alkaloid, quinine, obtained from the bark of various species of *Cinchona*.

Characters and Tests.—White silky crystals, efflorescent in warm air. No odour; taste very bitter. Soluble in 36 parts of *water*, and in 2 parts of *alcohol* (90 per cent.). Yields the *reactions* characteristic of chlorides. When to 10 millilitres of a 0.1 per cent. aqueous solution 0.5 millilitre of *solution of bromine* and, after well shaking, 1 drop of *strong solution of ammonia* are added, a deep green

coloration is produced. When 2 grammes are dissolved in a warm mortar in 20 millilitres of *water* at 60°, 1 gramme of powdered non-effloresced *sodium sulphate* added, the mixture triturated, cooled, allowed to stand at exactly 15° for half an hour with occasional stirring, the crystals of quinine sulphate pressed, and the expressed liquid filtered, 5 millilitres of this filtrate, transferred to a dry test-tube and brought to a temperature of 15°, yield, on the gradual addition of 6 millilitres of *solution of ammonia*, also at a temperature of 15°, a precipitate which redissolves on rotating the tube (limit of other cinchona alkaloids). Dissolves in *sulphuric acid* and in *nitric acid* without coloration. 1 gramme dissolves in 7 millilitres of a mixture of 2 volumes of *chloroform* and 1 volume of *absolute alcohol*. Loses not more than 9.1 per cent. of its weight when dried at 100°. Yields no characteristic *reactions* for barium or for sulphates. No appreciable ash.

*Dose.**Metric.*

6 to 60 centigrams.

Imperial.

1 to 10 grains.

QUININÆ HYDROCHLORIDUM ACIDUM

Acid Quinine Hydrochloride

Acid Quinine Hydrochloride, $C_{20}H_{24}N_2O_2 \cdot 2HCl$, is the acid hydrochloride of an alkaloid, quinine, obtained from the bark of various species of *Cinchona*.

Characters and Tests.—A white amorphous powder. No odour; taste intensely bitter. Soluble in less than 1 part of *water*. Aqueous solution acid to *litmus*. Yields the *reactions* characteristic of chlorides. Yields not more than the slightest characteristic *reactions* for sulphates. 1 gramme dissolved in 20 millilitres of *water* requires for neutralisation not more than 5.0 millilitres of *N/1 solution of sodium hydroxide*, *phenolphthalein* being used as indicator. Yields

a green coloration when tested as described under 'Quininæ Hydrochloridum.' Loses not more than 3 per cent. of its weight when dried at 100°. When 2 grammes are dissolved in 15 millilitres of *water*, the solution neutralised with *N/1 solution of sodium hydroxide*, mixed with 1 gramme of powdered non-effloresced *sodium sulphate*, and further treated as described under 'Quininæ Hydrochloridum,' the precipitate produced on the addition of *solution of ammonia* redissolves on rotating the tube (limit of other cinchona alkaloids). No appreciable ash.

Dose.

Metric.

6 to 60 centigrams.

Imperial.

1 to 10 grains.

QUININÆ SULPHAS

Quinine Sulphate

Quinine Sulphate, $(C_{20}H_{24}N_2O_2)_2 \cdot H_2SO_4 \cdot 7\frac{1}{2}H_2O$, is the sulphate of an alkaloid, quinine, obtained from the bark of various species of *Cinchona*.

Characters and Tests.—Small, light, white, silky crystals. No odour; taste intensely bitter. Soluble in 800 parts of *water*, and in 65 parts of *alcohol* (90 per cent.). Aqueous solution exhibits a blue fluorescence. Entirely soluble in *water* acidified with a mineral acid. Yields the *reactions* characteristic of sulphates. When to 10 millilitres of a 0.1 per cent aqueous solution 0.5 millilitre of *solution of bromine* and, after well shaking, 1 drop of *strong solution of ammonia* are added, a deep green coloration is produced. Exposed to dry air the crystals effloresce until the water of crystallisation is reduced from $7\frac{1}{2}$ molecules to 2 molecules. Aqueous solution yields with *solution of ammonia* a precipitate soluble in *ether*. When 2 grammes, weighed after drying at 50°, are digested at 60° to 65° in a stoppered test-tube with 20 millilitres of *water* for half an hour, repeatedly shaken, then allowed

to cool to 15°, kept at that temperature for half an hour, stirred from time to time, the crystals pressed, and the expressed liquid filtered, then 5 millilitres of this filtrate, transferred to a dry test-tube and brought to a temperature of 15°, yield, on the gradual addition of 6 millilitres of *solution of ammonia*, also at a temperature of 15°, a precipitate which redissolves on rotating the tube (limit of other cinchona alkaloids). 1 gramme dissolves in 7 millilitres of a mixture of 2 volumes of *chloroform* and 1 volume of *absolute alcohol*. No appreciable ash.

Dose.

Metric.

6 to 60 centigrams.

Imperial.

1 to 10 grains.

RESINA

• Resin

Resin is the residue left after the distillation of the oil of turpentine from the crude oleo-resin (crude turpentine) of various species of *Pinus*.

Characters and Tests.—Translucent, of a light amber colour, compact, brittle, pulverisable; fracture shining; odour and taste faintly terebinthinate. Soluble in *alcohol* (90 per cent.), in *ether*, *benzene*, and *carbon disulphide*. Readily fusible; burns with a dense yellow flame and much smoke, leaving no appreciable ash.

RESORCINUM

Resorcin

Synonym—Resorcinol

Resorcin, or meta-dihydroxy-benzene, $C_6H_4O_2$, may be obtained by the interaction of fused sodium hydroxide and sodium metabenzene-disulphonate.

Characters and Tests.—Colourless, shining, acicular or prismatic crystals. Faint odour; taste pungent and sweetish, followed by bitterness. Soluble in less than 1 part of *water*, or of *alcohol* (90 per cent.); very soluble in *ether*, and in *glycerin*; soluble in *olive oil*; slightly soluble in *chloroform*. Melting point 110° to 111° ; at a higher temperature sublimes without residue and without evolving an odour of phenol. Alkaline solutions darken in colour and exhibit a strong greenish fluorescence. A concentrated aqueous solution is colourless (absence of empyreumatic substances), and neutral or only slightly acid to *litmus*; it is unaffected by the addition of *solution of lead acetate* (absence of catechol). A weak aqueous solution is coloured bluish-violet by *T.Sol. of ferric chloride*, the colour changing to brownish-yellow on the addition of *solution of ammonia* (distinction from catechol and quinol). When 0.5 gramme is mixed with 2 millilitres of *solution of formaldehyde* and 2 millilitres of *solution of sodium hydroxide*, and the mixture heated to boiling, a deep red coloration is gradually developed.

Dose.

Metric.
6 to 30 centigrams.

Imperial.
1 to 5 grains.

RHEI RHIZOMA

Rhubarb

Rhubarb is the rhizome of *Rheum officinale*, *Baill.*, and other species collected in China and Thibet, deprived of most of the cortex and dried.

Characters and Test.—In compact, firm, cylindrical, barrel-shaped, conical or plano-convex pieces, often perforated, the perforation sometimes containing a fragment of cord. Surface rounded or slightly angular, but not shrunken, marked with reddish-brown lines embedded in a whitish ground-substance; usually covered with a

bright brownish-yellow powder. Fracture granular and uneven, the pinkish-brown fractured surface exhibiting numerous reddish-brown points and lines on a white ground-substance. For a short distance within the cambium the structure is radiate; within this there is a more or less distinct ring of closely approximated vascular bundles with central bast and radiating, reddish-brown medullary rays; in the parenchymatous cells abundant starch grains, an amorphous yellow substance and very large cluster-crystals of calcium oxalate. In powdered Rhubarb large cluster-crystals of calcium oxalate, often more than 100 microns in diameter, simple or compound starch grains, the single grains seldom exceeding 20 microns in diameter, fragments of reticulated vessels and of parenchymatous tissue, and small yellowish masses and globules which assume a reddish-pink colour with *solution of ammonia*; it is free from added starch and from sclerenchymatous cells and fibres. Characteristic, somewhat aromatic odour; taste bitter, slightly astringent. Ash not more than 15 per cent.

Dose.

*Metric.**Imperial.*

2 to 6 decigrams (repeated).

3 to 10 grains (repeated).

1 to 2 grammes (single).

15 to 30 grains (single).

RHŒADOS PETALA

Red-Poppy Petals

Red-Poppy Petals are the fresh petals of *Papaver Rhœas*, *Linn.*

Characters.—Transversely elliptical, about five centimetres wide, bright scarlet, smooth and lustrous; margin entire. Characteristic, somewhat unpleasant odour; taste slightly bitter.

ROSÆ GALLICÆ PETALA

Red-Rose Petals

Red-Rose Petals are the fresh and dried unexpanded petals of *Rosa gallica*, *Linn.* From cultivated plants.

Characters.—Usually in little cone-like masses, or sometimes separate and more or less crumpled. Petals velvety, deep purplish-red passing into brownish-yellow towards the base. Fragrant odour; taste slightly astringent.

SACCHARUM LACTIS

Milk Sugar

Synonym—Lactose

Milk Sugar is a crystallised sugar, $C_{12}H_{22}O_{11}, H_2O$, obtained from the whey of milk.

Characters and Tests.—A white powder, or in crystalline masses; no odour, taste slightly sweet. Soluble in 7 parts of cold *water* and in about 1 part of boiling *water*. 5 grammes dissolved in *water* require for neutralisation not more than 1.5 millilitres of *N/10 solution of sodium hydroxide* (limit of acidity). When 5 grammes are well shaken with 20 millilitres of *alcohol* (90 per cent.) and filtered, the filtrate leaves no appreciable residue on evaporation (absence of sucrose). Ash not more than 0.25 per cent.

SACCHARUM PURIFICATUM

Refined Sugar

Synonym—Sucrose

Refined Sugar is a crystallised sugar, $C_{12}H_{22}O_{11}$, obtained from the juice of the sugar-cane, sugar-beet and other plants.

Characters and Tests.—Colourless and inodorous crystals, or in crystalline masses. Readily and completely soluble in half its weight of *water*, forming a clear, colourless and odourless syrup which does not develop an unpleasant odour when acidified with *hypophosphorous acid* and allowed to stand for twenty-four hours. The syrup, heated to about 82° with *solution of potassio-cupric tartrate*, does not yield more than a trace of a red or yellow precipitate (absence of glucose). Yields no *reactions* for barium, strontium, calcium, chlorides or sulphates. Ash not more than 0.05 per cent.

SALICINUM

Salicin

Salicin, $C_{13}H_{18}O_7$, is a crystalline glucoside, which may be obtained from the bark of various species of *Salix*, and of *Populus*.

Characters and Tests.—Colourless, shining, trimetric, tabular crystals, or white, crystalline powder. Taste very bitter. Soluble in 28 parts of *water*, and in 80 parts of *alcohol* (90 per cent.); insoluble in *ether*. Melting point from 200° to 201° . Coloured red by *sulphuric acid*. When 0.1 gramme is gently heated with 0.2 gramme of *potassium bichromate* and 2 millilitres of *diluted sulphuric acid* an odour recalling meadow-sweet is developed. No appreciable ash.

Dose.

Metric.

3 to 12 decigrams.

Imperial.

5 to 20 grains.

SALOL

Salol

Salol, or phenyl salicylate, $C_{13}H_{10}O_3$, may be obtained by the interaction of salicylic acid and phenol.

Characters and Tests.—Colourless crystals, or crystalline powder. Aromatic odour; taste slight. Almost insoluble in *water*; soluble in 15 parts of *alcohol* (90 per cent.), in 0·3 part of *ether* or of *chloroform*, and in fixed and volatile oils. Melting point from 42° to 43°. Alcoholic solution neutral to *litmus*; yields a white precipitate with *solution of bromine*, and a violet coloration with dilute *T.Sol. of ferric chloride*. When 0·2 gramme is boiled with 5 millilitres of *solution of sodium hydroxide*, and the cooled solution acidified with *hydrochloric acid*, the odour of phenol is developed and a crystalline precipitate is formed. *Water* which has been shaken with Salol is not affected by *T.Sol. of ferric chloride* (absence of free salicylic acid and of readily soluble salicylates), and yields no characteristic reactions for sulphates or for chlorides. No appreciable ash.

*Dose.**Metric.*

3 to 12 decigrams.

Imperial.

5 to 20 grains.

SANTONINUM

Santonin

Santonin, $C_{15}H_{18}O_3$, is a crystalline principle which may be obtained from *santonica*, the dried unexpanded flower-heads of *Artemisia maritima*, *var. Stechmanniana*, *Besser*.

Characters and Tests.—Colourless, flat, rhombic prisms. Taste slightly bitter. Scarcely soluble in *water*; soluble in 2·5 parts of *chloroform*, and in 50 parts of *alcohol* (90 per cent.). Melting point 170°. Sunlight renders it yellow. Added to warm *alcoholic solution of potassium hydroxide* it yields a violet-red colour. Insoluble in diluted mineral acids. No appreciable ash.

*Dose.**Metric.*

6 to 20 centigrams.

Imperial.

1 to 3 grains.

SAPO ANIMALIS

Curd Soap

Curd Soap is soap made from sodium hydroxide and purified animal fats consisting principally of stearin ; it contains not more than 30 per cent. of water.

Characters and Tests.—Yellowish-white or greyish-white ; nearly inodorous ; easily moulded when heated, becoming horny and pulverisable when dried. Sparingly soluble in cold *water* ; completely soluble in hot *water* ; soluble in *alcohol* (90 per cent.). When 5 grammes of the dried and powdered Soap are dissolved in 50 millilitres of boiling *alcohol* (90 per cent.), and the solution filtered while hot, the filter being thoroughly washed with more of the boiling *alcohol*, the filtrate is neutral to *solution of phenolphthalein* (absence of alkaline hydroxides and free fatty acids), and if the filter is then washed with hot *water*, the washings require for neutralisation not more than 5 millilitres of *N/10 solution of sulphuric acid*, *solution of methyl orange* being used as indicator (limit of alkaline carbonates). Does not impart a greasy stain to white unglazed paper (absence of free fats). Loses not more than 30 per cent. of its weight when dried at 110°. Ash not deliquescent (absence of potassium soap).

SAPO DURUS

Hard Soap

Hard Soap is soap made from sodium hydroxide and olive oil ; it contains not more than 30 per cent. of water.

Characters and Tests.—Greyish-white, yellowish-white, or greenish-white ; becoming horny and pulverisable when dried. Nearly inodorous. Soluble in 20 parts of cold *water*, and in 1·5 parts of hot *water* ; soluble in *alcohol* (90 per cent.), more readily when warmed. Responds to

the tests for alkaline hydroxides and carbonates and for free fatty acids described under 'Sapo Animalis.' Does not impart a greasy stain to white unglazed paper (absence of free oil). Loses not more than 30 per cent. of its weight when dried at 110°. Ash not deliquescent (absence of potassium soap). The absence of fatty acids from oils other than Olive Oil is determined by the following process:—

Dissolve the Soap in hot *water*, add a slight excess of *hydrochloric acid* and heat on a water-bath until the liberated fatty acids form a transparent layer. Separate the fatty acids on a wet filter-paper, and wash with hot *water* until the washings are neutral to *methyl-orange*. Filter the oily layer through a dry filter paper in a warm oven. The fatty acids thus separated possess the following characters:—*Iodine value* 83 to 92; *acid value* 195 to 205; melting point 21° to 28°; *refractive index* at 40° 1.4540 to 1.4580,

See Appendix XII, page , *Oleum Olivæ*.

SAPO MOLLIS

Soft Soap

Soft Soap is soap made from potassium hydroxide and olive oil.

Characters and Tests.—Yellowish-white to green; of an unctuous consistence. Nearly inodorous. Readily soluble in *alcohol* (90 per cent.), leaving not more than 3 per cent. of insoluble residue. Responds to the tests for alkaline hydroxides and carbonates and for free fatty acids described under 'Sapo Animalis.' Does not impart a greasy stain to white unglazed paper (absence of free oil). Ash very deliquescent, and yields no characteristic *reactions* for copper. The mixed fatty acids, liberated and treated as described under 'Sapo Durus,' possess the characters there specified.

See Appendix XII, page , *Oleum Olivæ*.

SAPPAN**Sappan**

Sappan is the heart-wood of *Cæsalpinia Sappan*, *Linn.*

Characters and Test.—In hard, heavy pieces of variable size, or in orange-red chips. In transverse section, well-marked concentric rings, numerous narrow medullary rays, and large vessels. No odour; taste slightly astringent. It communicates to *alcohol* (90 per cent.) and to *water* a red colour, which becomes a carmine-red, but not purple, upon the addition of *solution of sodium hydroxide* (distinction from Logwood).

SCAMMONIÆ RADIX**Scammony Root**

Scammony Root is the dried root of *Convolvulus Scammonia*, *Linn.*

Characters and Test.—Brownish-grey or yellowish-grey, tapering or nearly cylindrical, varying usually from two to eight centimetres or more in diameter. Frequently contorted and longitudinally furrowed; enlarged at the crown, and bearing the remains of slender aerial stems. Fracture very coarsely fibrous; internally light or dark grey. In transverse section, numerous rounded wood bundles distributed throughout a paler ground tissue in which dark resin cells can be distinguished with a lens; in the parenchymatous tissue abundant, characteristic starch grains. Characteristic odour; taste at first somewhat sweet, afterwards slightly acrid. Yields to *alcohol* (90 per cent.) a resin which has the properties described under '*Scammoniaë Resina*.'

SCAMMONIÆ RESINA

Scammony Resin

Scammony Resin is a mixture of resins obtained from Scammony Root or from Orizaba Jalap Root.

Exhaust the coarsely powdered Root with Alcohol (90 per cent.). Recover most of the alcohol by distillation; pour the concentrated tincture thus obtained into eight times its volume of Distilled Water; allow the resin that separates to subside, wash it with Distilled Water, and dry at a gentle heat.

Characters and Tests.—Brownish, translucent, brittle fragments, breaking with a resinous fracture; readily reduced to a pale-brown powder. Characteristic, agreeable odour; taste acrid. Readily soluble in *alcohol* (90 per cent.). When 1 gramme of the powdered Resin is triturated with 20 millilitres of *water* and filtered, the filtrate is almost colourless. A solution of 0.1 gramme in 10 millilitres of *solution of sodium hydroxide*, boiled for a few moments, and cooled, when acidified with *hydrochloric acid*, may become opalescent but not immediately turbid (absence of certain other resins). Not less than 75 per cent. soluble in *ether*.

*Dose.**Metric.*

25 to 50 centigrams.

Imperial.

4 to 8 grains.

SCILLA

Squill

Squill is the bulb of *Urginea Scilla*, *Steinh.*; divested of its dry membranous outer scales, cut into slices, and dried. When powdered should be kept quite dry over quicklime.

Characters and Test.—In curved, yellowish-white, somewhat translucent strips, from about two and a half to five centimetres long, frequently tapering towards both ends; tough and slightly flexible while moist, but brittle and easily pulverisable when dry. Almost inodorous; taste disagreeably bitter. Ash not more than 5 per cent.

Dose (in powder).

<i>Metric.</i>	<i>Imperial.</i>
6 to 20 centigrams.	1 to 3 grains.

SCOPARII CACUMINA

Broom Tops

Broom Tops are the fresh and the dried tops of *Cytisus scoparius*, *Link.*

Characters.—Stem dark green, with long, straight, slender, alternate branches; the latter, like the upper part of the stem, winged, tough, flexible, and glabrous. Leaves, when present, small, sessile, and simple above, stalked and trifoliate below. Odour of the fresh tops, especially when bruised, characteristic; the dry tops almost inodorous.

SENEGÆ RADIX

Senega Root

Senega Root is the dried root of *Polygala Senega*, *Linn.*

Characters.—Greyish or brownish-yellow, slender, usually from five to ten centimetres long, with a knotty crown bearing the bases of numerous, slender, aerial stems; frequently curved or contorted, sparingly branched, keeled, sometimes transversely wrinkled. Fracture short. In transverse section, a horny translucent cortex free from

starch grains, and a white, frequently irregularly developed, wood. Characteristic odour; taste at first sweet, afterwards acrid.

SENNÆ FOLIA

Senna Leaves

Senna Leaves are the dried leaflets of *Cassia acutifolia*, *Delile*, or of *Cassia angustifolia*, *Vahl*. Known in commerce as Alexandrian and Tinnivelly senna.

Characters and Test.—Pale greyish-green or yellowish-green, thin, brittle; usually from two to four centimetres long (the leaflets of Alexandrian senna are usually smaller than those of Tinnivelly senna); lanceolate, or oval-lanceolate, acute, entire, and unequal at the base. Surface finely pubescent or nearly glabrous; veins on the under surface distinct. Epidermis of both surfaces consisting of polygonal cells and bearing one-celled, thick-walled, warty hairs together with stomata, each stoma being enclosed between two cells with their long axes parallel to the ostiole. The powdered Leaves greenish-yellow, exhibiting, in addition to the characteristic epidermis, stomata, and hairs, elongated palisade cells and grouped sclerenchymatous fibres accompanied by prismatic crystals of calcium oxalate. Ash not more than 12 per cent.

SENNÆ FRUCTUS

Senna Pods

Senna Pods are the dried ripe fruits of *Cassia acutifolia*, *Delile*, or of *Cassia angustifolia*, *Vahl*. X

Characters.—About five centimetres long, and from two to two and a half centimetres wide; broadly oblong or somewhat reniform; pale green; brownish in the

centre above the seeds; very flat; rounded at the base, slightly mucronate at the apex. Pericarp papery. Seeds obovate-cuneate, flattened. Odour and taste slight.

SERPENTARIÆ RHIZOMA

Serpentary Rhizome

Serpentary Rhizome is the dried rhizome and roots of *Aristolochia Serpentaria*, *Linn.*, or of *Aristolochia reticulata*, *Nutt.*

Characters and Test.—Rhizome of *Aristolochia Serpentaria* tortuous and slender, about two centimetres long and three millimetres thick; on the upper surface the remains of slender, aerial stems, and on the under surface numerous wiry interlacing roots, often about seven centimetres long. Both rhizome and roots dull yellowish-brown. Characteristic odour; taste strong, camphoraceous, bitter. Ash not more than 10 per cent.

Rhizome and roots of *Aristolochia reticulata* resemble the foregoing, but are longer and thicker, and the roots are straighter.

SEVUM BENZOATUM

Benzoated Suet

Prepared Suet		1000 grammes
Benzoin, in coarse powder		30 grammes

Melt the Suet, add the Benzoin, and maintain at a temperature of 60° for one hour, stirring frequently; strain, and stir until nearly cold.

In India, Benzoated Suet should be employed in making the official preparations for which Benzoated Lard (*Adeps Benzoatus*) is directed to be used.

SEVUM PRÆPARATUM

Prepared Suet

Prepared Suet is the purified internal fat of the abdomen of the sheep, *Ovis aries*, *Linn.*

Characters and Tests.—Firm, white, unctuous. Nearly inodorous; taste bland. *Saponification value* 192 to 195; *iodine value* 33 to 46; *acid value* not more than 2·0; melting point 45° to 50°; *refractive index* at 60° 1·4490 to 1·4510.

In India, Prepared Suet should be employed in making the official preparations for which Prepared Lard (*Adeps Præparatus*) is directed to be used.

SODII ARSENAS ANHYDROSUS

Anhydrous Sodium Arsenate

Anhydrous Sodium Arsenate is obtained by exposing to a temperature of 149° crystallised sodium arsenate, which may be prepared by treating with water the product of the fusion of arsenious anhydride with sodium nitrate and sodium carbonate. It contains not less than 98 per cent. of anhydrous di-sodium hydrogen arsenate, Na_2HAsO_4 .

Characters and Tests.—A white powder. Soluble in 6 parts of *water*; slightly soluble in *alcohol* (90 per cent.). Aqueous solution alkaline to *litmus*. Yields the *reactions* characteristic of sodium and of arsenates. When 0·25 gramme is dissolved in 25 millilitres of *water*, and to the solution 3 grammes of *potassium iodide* and 25 millilitres of *hydrochloric acid* are added, not less than 26·3 millilitres of *N/10 solution of sodium thiosulphate* are required to decolorise the iodine liberated. Yields no characteristic *reactions* for lead, copper, iron, aluminium, calcium, carbonates, chlorides, nitrates or sulphates. Loses not more than 2 per cent. of its weight when dried at 149° (limit of moisture).

*Dose.**Metric.*

1·5 to 6 milligrams.

Imperial.

$\frac{1}{40}$ to $\frac{1}{10}$ grain.

SODII BENZOAS

Sodium Benzoate

Sodium Benzoate may be obtained by neutralising benzoic acid with sodium carbonate. It contains not less than 96 per cent. of pure sodium benzoate, $\text{NaC}_7\text{H}_5\text{O}_2$.

Characters and Tests.—A white, subcrystalline, or amorphous powder. Inodorous, or with a faint odour of benzoin; taste unpleasant, sweetish, saline. Soluble in 2 parts of water, and in 24 parts of alcohol (90 per cent.). Yields the reactions characteristic of sodium. A 10 per cent. aqueous solution is slightly alkaline to *litmus*, gives a pale reddish precipitate with *T.Sol.* of *ferric chloride* and yields with *diluted hydrochloric acid* a crystalline precipitate of benzoic acid. Loses not more than 4 per cent. of its weight when dried at 110° . 1 gramme of this dried salt heated to redness till gases cease to be evolved leaves an alkaline residue which, treated with water, filtered and well washed, yields a clear solution requiring for neutralisation not less than 13.7 or more than 13.9 millilitres of *N/2 solution of sulphuric acid*. Yields no characteristic reactions for copper, iron, potassium, or carbonates, and not more than the slightest reactions for chlorides or sulphates. *Lead limit* 10 parts per million. *Arsenic limit* 2 parts per million.

Dose.

Metric.
3 to 20 decigrams.

Imperial.
5 to 30 grains.

SODII BICARBONAS

Sodium Bicarbonate

Sodium Bicarbonate may be obtained by exposing crystals of sodium carbonate to carbon dioxide, or by the interaction of sodium chloride and ammonium bicarbonate,

It contains not less than 98·5 per cent. of sodium hydrogen carbonate, NaHCO_3 .

Characters and Tests.—A white powder, or small, opaque, monoclinic crystals. Taste saline. Soluble in 11 parts of water. Yields the reactions characteristic of sodium and of bicarbonates. 1 gramme requires for neutralisation not less than 11·7 or more than 11·9 millilitres of *N/1 solution of sulphuric acid*. Yields no characteristic reactions for copper, iron, aluminium, calcium, sulphites, or thiosulphates, and not more than the slightest reactions for chlorides, sulphates, or ammonium. *Lead limit* 5 parts per million. *Arsenic limit* 2 parts per million. When 1 gramme of Sodium Bicarbonate is dissolved in 20 millilitres of cold water, without shaking, and 0·2 millilitre of *N/1 solution of sulphuric acid* and 2 drops of *solution of phenolphthalein* are added, no red colour is immediately developed (limit of carbonate). The addition of *T.Sol. of ferric chloride* to the aqueous solution acidified with *hydrochloric acid* causes no red coloration (absence of thiocyanates).

20 parts of Sodium Bicarbonate are neutralised by 16·7 parts of Citric Acid, and by 17·8 parts of Tartaric Acid.

Dose.

Metric.

3 to 20 decigrams.

Imperial.

5 to 30 grains.

SODII BROMIDUM

Sodium Bromide

Sodium Bromide may be obtained in the same manner as Potassium Bromide, sodium carbonate being used in place of potassium carbonate. When dried at 110° it contains not less than 99 per cent. of pure sodium bromide, NaBr .

Characters and Tests.—Small, white, cubic crystals, or a white granular powder, somewhat deliquescent. Taste

saline, somewhat bitter. Soluble in 1·5 parts of *water*, and in 16 parts of *alcohol* (90 per cent.). Yields the *reactions* characteristic of sodium and of bromides. Loses not more than 5 per cent. of its weight when dried at 110°. 0·5 gramme of this dried salt, dissolved in *water*, requires for complete precipitation not less than 48·1 or more than 48·9 millilitres of *N/10 solution of silver nitrate*. Yields no characteristic *reactions* for copper, iron, aluminium, zinc, calcium, magnesium, potassium, ammonium, carbonates, cyanides, bromates, or iodates, and not more than the slightest *reactions* for chlorides, iodides, or sulphates. *Lead limit* 10 parts per million. *Arsenic limit* 5 parts per million.

Dose.

Metric.
3 to 20 decigrams.

Imperial.
5 to 30 grains.

SODII CARBONAS

Sodium Carbonate

Sodium Carbonate may be obtained from sodium chloride by interaction with ammonium bicarbonate, ignition, and subsequent crystallisation. It contains not less than 99 per cent. of pure crystallised sodium carbonate, $\text{Na}_2\text{CO}_3, 10\text{H}_2\text{O}$.

Characters and Tests.—Transparent, colourless, rhombic crystals, efflorescent. Taste strongly alkaline. Soluble in 2 parts of *water*. Aqueous solution strongly alkaline to *litmus*. Free from the impurities enumerated under 'Sodii Bicarbonas.' When heated it liquefies and then dries, losing 62·9 per cent. of its weight. 1 gramme requires for neutralisation not less than 13·8 millilitres of *N/2 solution of sulphuric acid*. *Lead limit* 10 parts per million. *Arsenic limit* 2 parts per million.

20 parts of Sodium Carbonate are neutralised by 9·8 parts of Citric Acid, and by 10·5 parts of Tartaric Acid.

	<i>Dose.</i>	
<i>Metric.</i>		<i>Imperial.</i>
3 to 20 decigrams.		5 to 30 grains.

SODII CARBONAS EXSICCATUS

Exsiccated Sodium Carbonate

Exsiccated Sodium Carbonate is obtained by heating Sodium Carbonate until it loses nearly 63 per cent. of its weight. It contains not less than 95 per cent. of pure anhydrous sodium carbonate, Na_2CO_3 .

Characters and Tests.—A whitish powder. Taste strongly alkaline. Yields the *reactions* characteristic of sodium and of carbonates. 1 gramme requires for neutralisation not less than 18.0 millilitres of *N/1 solution of sulphuric acid*. *Lead limit* 25 parts per million. *Arsenic limit* 5 parts per million.

	<i>Dose.</i>	
<i>Metric.</i>		<i>Imperial.</i>
2 to 6 decigrams.		3 to 10 grains.

SODII CHLORIDUM

Sodium Chloride

Sodium Chloride, NaCl , may be obtained by purifying common salt.

Characters and Tests.—Small, white, crystalline grains, or transparent, cubic crystals, free from moisture. Taste saline. Soluble in 3 parts of *water*. Yields the *reactions* characteristic of sodium and of chlorides. Yields no characteristic *reactions* for potassium, bromides, or iodides, and not more than slight *reactions* for calcium, magnesium, or sulphates. *Lead limit* 10 parts per million. *Arsenic limit* 2 parts per million. 20 millilitres of a 5 per cent. aqueous solution are not immediately coloured blue by 0.5 millilitre of *solution of potassium ferrocyanide* (limit of iron).

SODII CITRO-TARTRAS EFFERVESCENS**Effervescent Sodium Citro-Tartrate**

Sodium Bicarbonate, in powder	. 510 grammes
Tartaric Acid, in powder	. 270 grammes
Citric Acid, in powder	. 180 grammes
Refined Sugar, in powder	. 150 grammes

Mix the powders thoroughly; place the mixture in a dish or pan of suitable form heated to between 93° and 104° . When the mixture, by aid of careful manipulation, has assumed a granular character, separate it into granules of uniform and convenient size by means of suitable sieves. Dry the granules at a temperature not exceeding 55° . The product weighs about one thousand grammes.

*Dose.**Metric.*

4 to 8 grammes.

Imperial.

60 to 120 grains.

SODII ET POTASSII TARTRAS**Sodium Potassium Tartrate**

Synonyms—Soda Tartarata : Tartarated Soda : Tartrate of Potassium and Sodium : Rochelle Salt

Sodium Potassium Tartrate may be obtained by neutralising Acid Potassium Tartrate with Sodium Carbonate. It contains not less than 98 per cent. of pure sodium potassium tartrate, $\text{NaKC}_4\text{H}_4\text{O}_6, 4\text{H}_2\text{O}$.

Characters and Tests.—Trimetric prisms with hemihedral facets. Taste saline, cooling. Sol bl in 1.5 parts of water; aqueous solution neutral to *litmus*. Yields the reactions characteristic of potassium, of sodium, and of tartrates. 1 gramme, heated to redness till gases cease to be evolved, leaves an alkaline residue which, when treated with water, filtered, and well washed, yields a clear solution

requiring for neutralisation not less than 13·9 millilitres of *N/2 solution of sulphuric acid*. Yields no characteristic reactions for copper, iron, calcium, ammonium, chlorides or sulphates. *Lead limit* 10 parts per million. *Arsenic limit* 2 parts per million.

Dose.

Metric.

8 to 16 grammes.

Imperial.

120 to 240 grains.

SODII HYPOPHOSPHIS

Sodium Hypophosphite

Sodium Hypophosphite may be obtained by the interaction of sodium carbonate and calcium hypophosphite. When dried at 110° it contains not less than 97 per cent. of pure sodium hypophosphite, NaPH_2O_2 .

Characters and Tests.—White granules, deliquescent. Taste bitter, nauseous. Soluble in 1 part of *water* and in 30 parts of *alcohol* (90 per cent.); insoluble in *ether*. Yields, when heated, spontaneously inflammable hydrogen phosphide and hydrogen. Yields the reactions characteristic of sodium. Rapidly attacked by oxidising agents. Its solution yields with a warm solution of *copper sulphate* a red precipitate of cuprous hydride, which, on boiling, evolves hydrogen. Yields no characteristic reactions for copper, iron, aluminium, zinc, calcium, magnesium, potassium, or ammonium, and not more than the slightest reactions for carbonates, chlorides, or sulphates. *Lead limit* 10 parts per million. *Arsenic limit* 5 parts per million. Loses not more than 2 per cent. of its weight when dried at 110°. When the salt thus dried is assayed by the process described under ‘*Calcii Hypophosphis*’ not more than 28 millilitres of *N/10 solution of sodium thiosulphate* are required to decolorise the iodine liberated, corresponding to 97 per cent. of pure sodium hypophosphite, NaPH_2O_2 .

*Dose.**Metric.*

2 to 6 decigrams.

Imperial.

3 to 10 grains.

SODII IODIDUM**Sodium Iodide**

Sodium Iodide may be obtained from iodine and sodium hydroxide by a process similar to that employed in making Potassium Iodide, the salt being crystallised at a temperature not lower than 20° . When dried at 110° it contains not less than 99 per cent. of pure sodium iodide, NaI.

Characters and Tests.—A white crystalline powder, deliquescent. Taste saline and somewhat bitter. Soluble in less than 1 part of *water* and in 3 parts of *alcohol* (90 per cent.). Yields the *reactions* characteristic of sodium and of iodides. Loses not more than 5 per cent. of its weight when dried at 110° ; 0.5 gramme of this dried salt requires for complete precipitation not less than 33.0 or more than 33.9 millilitres of *N/10 solution of silver nitrate*. Yields no characteristic *reactions* for copper, iron, aluminium, calcium, magnesium, potassium, ammonium, bromates, cyanides, carbonates, or iodates, and not more than the slightest *reactions* for bromides, chlorides, or sulphates. *Lead limit* 10 parts per million. *Arsenic limit* 5 parts per million.

*Dose.**Metric.*

3 to 12 decigrams.

Imperial.

5 to 20 grains.

SODII NITRIS**Sodium Nitrite**

Sodium Nitrite may be obtained by fusing sodium nitrate with metallic lead. It contains not less than 95 per cent. of pure sodium nitrite, NaNO_2 .

Characters and Tests.—A white crystalline powder, deliquescent. Taste saline. Soluble in 1·5 parts of *water*. Yields the *reactions* characteristic of sodium and of nitrites. 0·1 gramme dissolved in *water* decolorises not less than 27·5 millilitres of *N/10 solution of potassium permanganate*, the solution being maintained slightly acid. Aqueous solution neutral or slightly alkaline; gives no precipitate on the addition of *diluted sulphuric acid* (absence of lead). *Arsenic limit* 5 parts per million.

Dose.

Metric.
6 to 12 centigrams.

Imperial.
1 to 2 grains.

SODII PHOSPHAS

Sodium Phosphate

Synonym—Di-sodium Hydrogen Phosphate

Sodium Phosphate may be obtained by the interaction of sodium carbonate and the solution of acid calcium phosphate produced on mixing bone-ash and sulphuric acid. It contains not less than 99·5 per cent. of pure crystallised di-sodium hydrogen phosphate, $\text{Na}_2\text{HPO}_4, 12\text{H}_2\text{O}$.

Characters and Tests.—Transparent, colourless, rhombic prisms, efflorescent. Taste saline. Soluble in 7 parts of *water*, the solution being alkaline to *litmus*. Yields the *reactions* characteristic of sodium and of phosphates. 5 grammes dissolved in 50 millilitres of *water* require for neutralisation not less than 13·9 millilitres of *N/1 solution of sulphuric acid*, *solution of methyl orange* being used as indicator. Yields no characteristic *reactions* for potassium, ammonium, carbonates, or chlorides, and not more than the slightest *reaction* for sulphates. *Lead limit* 5 parts per million. *Arsenic limit* 5 parts per million.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
2 to 8 grammes (repeated).	30 to 120 grains (repeated).
10 to 16 grammes (single).	150 to 240 grains (single).

SODII PHOSPHAS ACIDUS

Sodium Acid Phosphate

Synonyms—Sodium Di-hydrogen Phosphate : Sodium Biphosphate

Sodium Acid Phosphate may be obtained by the combination of di-sodium hydrogen phosphate with phosphoric acid. It contains not less than 70 per cent. of sodium di-hydrogen phosphate, NaH_2PO_4 .

Characters and Tests.—Transparent, colourless, rhombic crystals or in crystalline powder. Taste saline, acid. Readily soluble in *water*, the solution being acid to *litmus*. Yields the *reactions* characteristic of sodium and of phosphates. 1 gramme dissolved in a mixture of 10 millilitres of *water* and 10 millilitres of *glycerin* requires for neutralisation not less than 5·8 millilitres of *N/1 solution of sodium hydroxide*, *solution of phenolphthalein* being used as indicator. Yields no characteristic *reactions* for potassium and ammonium, and not more than the slightest *reactions* for sulphates or chlorides. *Lead limit* 5 parts per million. *Arsenic limit* 2 parts per million.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
2 to 4 grammes.	30 to 60 grains.

THE UNIVERSITY OF CHICAGO
CHICAGO, ILLINOIS

THE UNIVERSITY OF CHICAGO

CHICAGO, ILLINOIS

CHICAGO, ILLINOIS

CHICAGO, ILLINOIS

CHICAGO, ILLINOIS

CHICAGO, ILLINOIS

SODII PHOSPHAS EFFERVESCENS

Effervescent Sodium Phosphate

Sodium Phosphate, in crystals	. 500 grammes
Sodium Bicarbonate, in powder	. 500 grammes
Tartaric Acid, in powder	. 270 grammes
Citric Acid, in powder	. 180 grammes

Dry the Sodium Phosphate until it has lost about 60 per cent. of its weight; powder the dried salt and mix it with the other ingredients. Place the whole in a dish or pan of suitable form heated to between 94° and 105°. When the mixture, by aid of careful manipulation, has assumed a granular character, separate it into granules of uniform and convenient size by means of suitable sieves. Dry the granules at a temperature not exceeding 55°. The product weighs about one thousand grammes.

*Dose.**Metric.**Imperial.*

4 to 8 grammes (repeated). 60 to 120 grains (repeated).
10 to 16 grammes (single). 150 to 240 grains (single).

SODII SALICYLAS

Sodium Salicylate

*Fibrolysin = Thiosinamin
Sodio-Salicylat*

Sodium Salicylate may be obtained by the interaction of salicylic acid and sodium carbonate. It contains not less than 99.5 per cent. of pure sodium salicylate, $\text{NaC}_7\text{H}_5\text{O}_3$.

Characters and Tests.—Small colourless scales, or tabular crystals with a pearly lustre. No odour; taste sweetish, unpleasant, saline. Soluble in 1 part of *water*, but this solution, when allowed to stand, is liable to deposit crystals of the salt containing 6 molecules of water of crystallisation;

soluble in 6 parts of *alcohol* (90 per cent.). Solutions neutral or faintly acid to *litmus*. Carbonises when heated, leaving finally a white ash which effervesces with acids and imparts an intense yellow colour to flame. *T.Sol.* of *ferric chloride* colours a dilute solution violet. 2 grammes, heated to redness till gases cease to be evolved, leave an alkaline residue which, when treated with *water*, filtered, and well washed, yields a clear solution requiring for exact neutralisation not less than 24·8 millilitres of *N/2 solution of sulphuric acid*. When to a concentrated aqueous solution excess of *diluted nitric acid* is added a precipitate is produced which, collected, washed, and dried, answers to the tests described under 'Acidum Salicylicum,' and the filtrate yields not more than the slightest reactions for sulphates or for chlorides. *Lead limit* 10 parts per million. *Arsenic limit* 2 parts per million. 50 to 100 grammes kept in a closed vessel for several days do not evolve the slightest odour of phenol. Dissolves without coloration or effervescence in *sulphuric acid* (absence of certain organic impurities and of carbonates).

Dose.

Metric.
6 to 20 decigrams.

Imperial.
10 to 30 grains.

SODII SULPHAS

Sodium Sulphate

Synonym—Glauber's Salt

Sodium Sulphate, $\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$, may be obtained by the interaction of sodium chloride with sulphuric acid.

Characters and Tests.—In transparent monoclinic prisms; efflorescent. Taste bitter, saline. Soluble in 3 parts of *water*; insoluble in *alcohol* (90 per cent.). Loses about 55·9 per cent. of its weight when dried at 100°. Yields

the *reactions* characteristic of sodium and of sulphates. 1 gramme dissolved in *water* acidified with *hydrochloric acid* gives, on the addition of excess of *solution of barium chloride*, a white precipitate which, washed and dried, weighs about 0.724 gramme. Yields no characteristic *reactions* for iron, magnesium, potassium, ammonium, or carbonates, and not more than the slightest *reactions* for chlorides. *Lead limit* 5 parts per million. *Arsenic limit* 2 parts per million.

Dose.

*Metric.**Imperial.*

2 to 8 grammes (repeated). 30 to 120 grains (repeated).
10 to 16 grammes (single). 150 to 240 grains (single).

SODII SULPHAS EFFERVESCENS

Effervescent Sodium Sulphate

Sodium Sulphate, in crystals . . .	500 grammes
Sodium Bicarbonate, in powder . . .	500 grammes
Tartarie Acid, in powder . . .	270 grammes
Citric Acid, in powder . . .	180 grammes

Dry the Sodium Sulphate until it has lost about 55 per cent. of its weight; powder the dried salt, and mix it with the other ingredients. Place the whole in a dish or pan of suitable form, heated to between 94° and 105°. When the mixture, by aid of careful manipulation, has assumed a granular character, separate it into granules of uniform and convenient size by means of suitable sieves. Dry the granules at a temperature not exceeding 55°. The product weighs about one thousand grammes.

Dose.

*Metric.**Imperial.*

4 to 8 grammes (repeated). 60 to 120 grains (repeated).
10 to 16 grammes (single). 150 to 240 grains (single).

THE UNIVERSITY OF CHICAGO

PHYSICS DEPARTMENT
1950-1951
FACULTY

1950-1951
FACULTY

PHYSICS DEPARTMENT

1950-1951

1950-1951
FACULTY

1950-1951
FACULTY

SODII SULPHIS

Sodium Sulphite

Sodium Sulphite may be obtained by the interaction of sulphurous acid and sodium carbonate. It contains not less than 94 per cent. of pure crystallised sodium sulphite, $\text{Na}_2\text{SO}_3 \cdot 7\text{H}_2\text{O}$.

Characters and Tests.—Colourless, transparent, monoclinic prisms, efflorescent in dry air. Inodorous; taste saline and sulphurous. Soluble in 2 parts of *water*; insoluble in *alcohol* (90 per cent.). Yields the *reactions* characteristic of sodium and of sulphites. Aqueous solution neutral or faintly alkaline; on the addition of *hydrochloric acid* evolves sulphur dioxide, but does not become cloudy (absence of thiosulphate). 0.3 gramme dissolved in 30 millilitres of *N/10 solution of iodine* yields a solution which requires for complete decolorisation not more than 7.6 millilitres of *N/10 solution of sodium thiosulphate*. *Arsenic limit* 5 parts per million.

*Dose.**Metric.*

3 to 12 decigrams.

Imperial.

5 to 20 grains.

SPIRITUS ÆTHERIS

Spirit of Ether

Ether 500 millilitres
Alcohol (90 per cent.) 1000 millilitres

Mix.

Test.—Specific gravity 0.802 to 0.806.

*Dose.**Metric.*

12 to 25 decimils (repeated).
4 to 6 mils (single).

Imperial.

20 to 40 minims (repeated).
60 to 90 minims (single).

▲ ▲

SPIRITUS ÆTHERIS NITROSI

Spirit of Nitrous Ether

Synonym—Sweet Spirit of Nitre

Spirit of Nitrous Ether is an alcoholic solution containing not less than 1·52 or more than 2·66 per cent. by weight of ethyl nitrite, together with aldehyde, and other substances. It should be kept in well-closed vessels; preferably in a cool dark place, and in small amber bottles.

Nitric Acid	150 millilitres
Sulphuric Acid	100 millilitres
Copper of commerce, in wire or turnings	100 grammes
Alcohol (90 per cent.)	a sufficient quantity

To one thousand millilitres of the Alcohol add gradually the Sulphuric Acid, and then one hundred and twenty-five millilitres of the Nitric Acid, stirring constantly. Transfer the mixture to a retort or flask, in which the copper has been placed, and to which is attached an efficient condenser with a receiver containing one thousand millilitres of the Alcohol. Surround the receiver with ice-cold water and distil gently at a temperature commencing at about 77°, and rising to 80°, but not exceeding 82°, until the volume of liquid in the receiver has been increased to sixteen hundred millilitres. Then allow the contents of the retort to cool, introduce the remaining twenty-five millilitres of Nitric Acid, and resume the distillation as before, until the liquid in the receiver has been increased to seventeen hundred millilitres. Mix this liquid with one thousand millilitres of the Alcohol, or with as much as will make the product contain 2·66 per cent. by weight of ethyl nitrite when tested as described in the following paragraph.

Characters and Tests.—A transparent liquid, having a very faint yellowish tinge. Peculiar penetrating apple-like odour; taste characteristic. Specific gravity 0·838 to 0·842. When Spirit of Nitrous Ether is carefully

poured on an acidified strong solution of *ferrous sulphate* contained in a test-tube, a deep olive-brown coloration is produced at the surface of contact of the two liquids, widening as the tube is gently shaken. Does not effervesce, or only very slightly, when shaken with *sodium bicarbonate* (limit of acid). 10 millilitres mixed with 5 millilitres of *N/1 solution of sodium hydroxide* and 5 millilitres of *water*, assume a yellow colour, which does not become brown on standing twelve hours (limit of aldehyde). 1 volume, shaken briskly at intervals during five minutes in a brine-charged nitrometer, with 1 volume of *solution of potassium iodide* and 1 volume of *diluted sulphuric acid*, and renewed shaking, yields at 15.5° and normal pressure not less than 4 or more than 7 volumes of nitric oxide gas, corresponding to not less than 1.52 or more than 2.66 parts by weight of ethyl nitrite in 100 parts by weight of the Spirit.

Dose.

Metric.
1 to 4 mils.

Imperial.
15 to 60 minims.

SPIRITUS AMMONIÆ AROMATICUS

Aromatic Spirit of Ammonia

Synonym—Spirit of Sal Volatile

Ammonium Carbonate . . .	100 grammes
Strong Solution of Ammonia . .	200 millilitres
Oil of Nutmeg . . .	14 millilitres
Oil of Lemon . . .	20 millilitres
Alcohol (90 per cent.) . . .	3000 millilitres
Distilled Water . . .	1500 millilitres

Place the Oil of Lemon, Oil of Nutmeg, and Alcohol with the Distilled Water in a retort; distil three thousand five hundred millilitres; then distil and separately collect an

additional two hundred and twenty-five millilitres. Place the latter, together with the Ammonium Carbonate and the Strong Solution of Ammonia, in a bottle holding rather more than five hundred millilitres; securely cork the bottle and gently warm it in a water-bath to 60° , shaking from time to time until all the salt has dissolved. Filter the resulting solution when cold through cotton wool, and gradually mix the filtrate with the portion first distilled.

Characters and Tests.—A nearly colourless transparent liquid. Odour and taste pungent and ammoniacal. Specific gravity 0.888 to 0.893. 20 millilitres require for neutralisation 25.5 millilitres of *N/1 solution of sulphuric acid*, corresponding to about 2.4 per cent. of ammonia (NH_3) or 2.16 grammes in 100 millilitres. When 20 millilitres of the Spirit are mixed with 50 millilitres of water and excess of *solution of barium chloride*, the mixture heated to 70° , the precipitate collected, washed until free from alkali, and dissolved in 20 millilitres of *N/1 solution of hydrochloric acid*, the solution thus obtained, after being boiled and cooled, requires for neutralisation not less than 7.3 or more than 8 millilitres of *N/1 solution of sodium hydroxide*, corresponding to not less than 2.36 or more than 2.5 grammes of ammonium carbonate, calculated as $\text{N}_3\text{H}_{11}\text{C}_2\text{O}_5$, in 100 millilitres of the Spirit.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
12 to 25 decimils (repeated).	20 to 40 minims (repeated).
4 to 6 mils	60 to 90 minims
largely diluted (single).	largely diluted (single).

SPIRITUS AMMONIÆ FETIDUS

Fetid Spirit of Ammonia

Asafetida	75 grammes
Strong Solution of Ammonia	100 millilitres
Alcohol (90 per cent.) sufficient to produce	1000 millilitres

Break the Asafetida into small pieces, and macerate it in a closed vessel in seven hundred and fifty millilitres of the Alcohol for twenty-four hours; distil until alcoholic vapours cease to be condensed; mix the distillate with the Strong Solution of Ammonia, and add sufficient Alcohol to produce the required volume.

Characters and Tests.—A nearly colourless, transparent liquid with a strong odour of ammonia and Asafetida. Specific gravity 0.842 to 0.850. 25 millilitres require for neutralisation not less than 40 millilitres of *N/1 solution of sulphuric acid*, corresponding to not less than 2.72 grammes of ammonia (NH_3) in 100 millilitres.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
12 to 25 decimils (repeated).	20 to 40 minims (repeated).
4 to 6 mils	60 to 90 minims
largely diluted (single).	largely diluted (single).

SPIRITUS ANISI

Spirit of Anise

Oil of Anise	100 millilitres
Alcohol (90 per cent.) sufficient to produce	1000 millilitres

Dissolve. When not clear, shake with a little *powdered talc* and filter.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
3 to 12 decimils.	5 to 20 minims.

SPIRITUS ARMORACIÆ COMPOSITUS**Compound Spirit of Horseradish**

Horseradish Root, scraped . . .	125 grammes
Dried Bitter-Orange Peel, well bruised	125 grammes
Nutmeg, bruised	3 grammes
Alcohol (90 per cent.)	625 millilitres
Distilled Water	750 millilitres

Macerate the Horseradish Root in the Distilled Water for one hour, add the other ingredients, and distil one thousand millilitres.

Test.—Specific gravity 0·917 to 0·927.

Dose.

Metric.
4 to 8 mils.

Imperial.
1 to 2 fluid drachms.

SPIRITUS CAJUPUTI**Spirit of Cajuput**

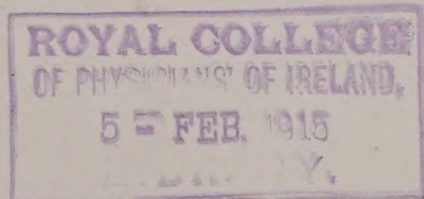
Oil of Cajuput	100 millilitres
Alcohol (90 per cent.) sufficient to pro- duce	1000 millilitres

Dissolve. When not clear, shake with a little *powdered talc* and filter.

Dose.

Metric.
3 to 12 decimils.

Imperial.
5 to 20 minims.



SPIRITUS CAMPHORÆ

Spirit of Camphor

Camphor	100 grammes
Alcohol (90 per cent.) sufficient to produce	1000 millilitres

Dissolve.

Tests.—Specific gravity, 0·845 to 0·850. *Optical rotation* at 15·5° not less than + 4°.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
3 to 12 decimils.	5 to 20 minims.

SPIRITUS CHLOROFORMI

Spirit of Chloroform

Synonyms—Chloric Ether; Spirit of Chloric Ether

Chloroform	50 millilitres
Alcohol (90 per cent.) sufficient to produce	1000 millilitres

Dissolve.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
3 to 12 decimils (repeated).	5 to 20 minims (repeated).
20 to 25 decimils (single).	30 to 40 minims (single).

SPIRITUS CINNAMOMI

Spirit of Cinnamon

Oil of Cinnamon. 100 millilitres
 Alcohol (90 per cent.) sufficient to
 produce. 1000 millilitres

Dissolve. When not clear, shake with a little *powdered talc* and filter.

Dose.

Metric.
 3 to 12 decimils.

Imperial.
 5 to 20 minims.

SPIRITUS JUNIPERI

Spirit of Juniper

Oil of Juniper 100 millilitres
 Alcohol (90 per cent.) sufficient to
 produce 1000 millilitres

Dissolve. When not clear, shake with a little *powdered talc* and filter.

Dose.

Metric.
 3 to 12 decimils.

Imperial.
 5 to 20 minims.

This Spirit is twice the strength of the corresponding preparation of the British Pharmacopœia, 1898.

*

SPIRITUS LAVANDULÆ**Spirit of Lavender**

Oil of Lavender 100 millilitres
Alcohol (90 per cent.) sufficient to
produce 1000 millilitres

Dissolve. When not clear, shake with a little *powdered talc* and filter.

Dose.

Metric.
3 to 12 decimils.

Imperial.
5 to 20 minims.

SPIRITUS MENTHÆ PIPERITÆ**Spirit of Peppermint**

Oil of Peppermint 100 millilitres
Alcohol (90 per cent.) sufficient to
produce 1000 millilitres

Dissolve. When not clear, shake with a little *powdered talc* and filter.

Dose.

Metric.
3 to 12 decimils.

Imperial.
5 to 20 minims.

SPIRITUS MYRISTICÆ**Spirit of Nutmeg**

Oil of Nutmeg 100 millilitres
Alcohol (90 per cent.) sufficient to
produce 1000 millilitres

Dissolve. When not clear, shake with a little *powdered talc* and filter.

*Dose.**Metric.*

3 to 12 decimils.

Imperial.

5 to 20 minims.

SPIRITUS RECTIFICATUS

Alcohol (90 per cent)

Synonym—Rectified Spirit

Alcohol (90 per cent.) is a mixture of ethyl hydroxide and water, containing in 100 parts by volume 90 parts by volume of ethyl hydroxide, C_2H_5OH ; and is obtained by the distillation of fermented saccharine liquids.

Characters and Tests.—A colourless, transparent, very mobile and inflammable liquid. Characteristic pleasant odour; taste strong spirituous burning. Specific gravity 0.8337. Contains 85.68 per cent. by weight of ethyl hydroxide, C_2H_5OH , and 14.32 per cent. by weight of water. Burns with a blue smokeless flame. Leaves no residue on evaporation (absence of non-volatile matter). Remains clear when mixed with *water* (absence of oily or resinous substances). A little exposed on clean white filter paper leaves no unpleasant smell after the alcohol has evaporated (absence of fusel oil and allied impurities). 100 millilitres, with 2 millilitres of *N/10 solution of silver nitrate*, exposed for twenty-four hours to bright light and then decanted from the black powder which has formed, undergo no further change when again exposed to light with more of the *N/10 solution* (absence of more than traces of amylic alcohol and of other organic impurities). When mixed with half its volume of a 20 per cent. aqueous solution of *sodium hydroxide*, the mixture does not immediately darken in colour (absence of more than traces of aldehyde). No immediate darkening in colour is caused by the addition

of *solution of ammonia* (absence of tannin, excess of aldehyde, and other organic impurities).

On mixing Alcohol (90 per cent.) and water, contraction of volume and rise of temperature occur. When such a mixture is prescribed in the British Pharmacopœia, the cooled liquid should be employed.

Diluted Alcohol.—The four official liquids obtained by diluting 'Alcohol (90 per cent.)' with Distilled Water, contain, respectively, seventy, sixty, forty-five, and twenty per cent. of ethyl hydroxide by volume. They may be prepared as described in the following paragraphs.

1. Alcohol (70 per cent.).—With one thousand millilitres of Alcohol (90 per cent.) mix three hundred and ten and a half (310·5) millilitres of Distilled Water. Specific gravity 0·8899.

2. Alcohol (60 per cent.).—With one thousand millilitres of Alcohol (90 per cent.) mix five hundred and thirty-six and a half (536·5) millilitres of Distilled Water. Specific gravity 0·9134.

3. Alcohol (45 per cent.).—With one thousand millilitres of Alcohol (90 per cent.) mix one thousand and fifty-three and a half (more accurately 1053·4) millilitres of Distilled Water. Specific gravity 0·9435.

4. Alcohol (20 per cent.).—With one thousand millilitres of Alcohol (90 per cent.) mix three thousand five hundred and fifty-eight (3558·0) millilitres of Distilled Water. Specific gravity 0·9760.

For a Table of proportions relating to the preparation of diluted Alcohols, see Appendix XIII.

SPIRITUS ROSMARINI

Spirit of Rosemary

Oil of Rosemary 100 millilitres

Alcohol (90 per cent.) sufficient to
produce 1000 millilitres

Dissolve. When not clear, shake with a little *powdered talc* and filter.

STAPHISAGRIÆ SEMINA**Stavesacre Seeds**

Stavesacre Seeds are the dried ripe seeds of *Delphinium Staphisagria*, *Linn.*

Characters.—Irregularly triangular or obscurely quadrangular, arched, blackish-brown when fresh, but becoming dull greyish-brown on keeping. Surface wrinkled and deeply pitted; kernel soft, whitish, oily. No marked odour; taste nauseous, bitter and acrid.

STRAMONII FOLIA**Stramonium Leaves**

Stramonium Leaves are the dried leaves of *Datura Stramonium*, *Linn.*

Characters and Test.—Ovate, petiolate, usually from ten to fifteen centimetres long, often unequal at the base; margin sinuate-dentate, apex acuminate. Upper surface dark greyish-green; under surface paler, and minutely wrinkled. Walls of the epidermal cells sinuous; stomata on both surfaces; on the lower surface, especially of young leaves, curved multicellular hairs with thin, warty walls, and also glandular hairs with unicellular or multicellular stalks; in the mesophyll numerous cluster-crystals of calcium oxalate. Characteristic odour; taste bitter, unpleasant. Ash not more than 18 per cent.

STRAMONII SEMINA**Stramonium Seeds**

Stramonium Seeds are the dried ripe seeds of *Datura Stramonium*, *Linn.*

Characters.—Dark brown or nearly black, about four

millimetres long, reniform, flattened. Surface marked with reticulate depressions and minutely pitted. Embryo curved and embedded in a white oily endosperm. No marked odour; taste slightly bitter.

STRONTII BROMIDUM

Strontium Bromide

Strontium Bromide may be obtained by neutralising dilute hydrobromic acid with strontium carbonate, evaporating and crystallising. It contains not less than 97 per cent. of pure crystallised strontium bromide, $\text{SrBr}_2 \cdot 6\text{H}_2\text{O}$.

Characters and Tests.—White acicular crystals, deliquescent. Taste saline, slightly bitter. Soluble in less than 1 part of *water*, and in *alcohol* (90 per cent.). Yields the *reactions* characteristic of bromides; an aqueous solution slowly deposits a crystalline precipitate on the addition of *solution of calcium sulphate*. A solution of 1 gramme in *water* to which 5 millilitres of *solution of sodium acetate* and 3 millilitres of *acetic acid* have been added, does not become cloudy on the addition of 1 millilitre of *solution of potassium chromate* (absence of barium). 1 gramme dissolved in *water* requires for complete precipitation not less than 54.6 or more than 57 millilitres of *N/10 solution of silver nitrate*. 0.5 gramme moistened with *sulphuric acid* and gently ignited leaves a white residue weighing not less than 0.250 gramme. *Lead limit* 20 parts per million. *Arsenic limit* 5 parts per million.

Dose.

Metric.

3 to 20 decigrams.

Imperial.

5 to 30 grains.

STROPHANTHI SEMINA

Strophanthus Seeds

Strophanthus Seeds are the dried ripe seeds of *Strophanthus Kombé, Oliver*, freed from the awns.

Characters and Test.—Oval, acuminate, about fifteen millimetres long and four millimetres broad; flattened, narrowed towards the base, which is obtuse; covered with silky appressed hairs; provided on one side with a longitudinal ridge running from the centre to the apex; of a greenish-fawn colour. Kernel white and oily; cotyledons straight; endosperm narrow; in the seed-coats not more than an occasional crystal of calcium oxalate. Characteristic odour; taste very bitter. *Sulphuric acid* diluted with one-fifth of its volume of *water* colours the endosperm, and sometimes the cotyledons, dark green (presence of strophanthin).

STRYCHNINA

Strychnine

Strychnine, $C_{21}H_{22}N_2O_2$, is an alkaloid, obtained from the seeds of *Strychnos Nux-vomica, Linn.*, and other species of *Strychnos*.

Characters and Tests.—Colourless, transparent, prismatic crystals, permanent in the air. Very slightly soluble in *water*, but sufficiently soluble to impart an intensely bitter taste; soluble in about 150 parts of *alcohol* (90 per cent.); less soluble in boiling *alcohol*. *Sulphuric acid* forms with it a colourless solution which, on the addition of *nitric acid*, acquires not more than a faint pink colour (limit of brucine). When a small fragment is dissolved in 2 or 3 drops of *sulphuric acid* on a white porcelain plate and a crystal of *potassium bichromate* is slowly moved through the solution, an intense violet colour is produced, passing to red and yellow. No appreciable ash.

*Dose.**Metric.*

1 to 4 milligrams.

Imperial. $\frac{1}{64}$ to $\frac{1}{16}$ grain.

STRYCHNINÆ HYDROCHLORIDUM

Strychnine Hydrochloride

Strychnine Hydrochloride, $C_{21}H_{22}N_2O_2HCl \cdot 2H_2O$, is the hydrochloride of the alkaloid strychnine.

Characters and Tests.—Small, colourless, prismatic crystals. Soluble in 60 parts of *water*. Aqueous solution neutral to *litmus*; taste intensely bitter. Loses from 7 to 9 per cent. of its weight when dried at 110° . Responds to the tests enumerated under 'Strychnina,' and yields the *reactions* characteristic of chlorides. No appreciable ash.

*Dose.**Metric.*

1 to 4 milligrams.

Imperial. $\frac{1}{64}$ to $\frac{1}{16}$ grain.

STYRAX PRÆPARATUS

Prepared Storax

Prepared Storax is a balsam obtained from the wounded trunk of *Liquidambar orientalis*, *Mill.*, purified by solution in alcohol, filtration and evaporation of the solvent.

Characters and Tests.—Brownish-yellow, viscous, transparent in thin layers. Entirely soluble in *alcohol* (90 per cent.) and in *ether*. Odour and taste agreeable and balsamic. Boiled with *solution of potassium bichromate* and *sulphuric acid* it evolves an odour of benzaldehyde. Loses not more than 5 per cent. of its weight when heated in a thin layer

on a water-bath for one hour. *Acid value* not less than 60 or more than 90; *ester value* not less than 100 or more than 146. Yields not less than 20 per cent. of cinnamic acid when tested by the following method :—

Dissolve 2·5 grammes of the Storax in 25 millilitres of *N/2 alcoholic solution of potassium hydroxide*, boil for one hour under a reflux condenser, neutralise with *N/2 solution of sulphuric acid*, remove the alcohol by evaporation and dissolve the residue in 50 millilitres of *water*. Shake this aqueous solution with 20 millilitres of *ether*; after separation remove the ethereal layer, wash it with 5 millilitres of *water* and add the washings to the aqueous solution, rejecting the ethereal liquid. Acidify the aqueous solution and shake it with four successive portions, each of 20 millilitres, of *ether*. Mix the ethereal solutions, wash with a few millilitres of *water*, transfer to a flask and distil off the ether. To the residue add 100 millilitres of *water* and boil vigorously for fifteen minutes under a reflux condenser. Filter the solution while hot, cool to 15° and collect on a tared filter the crystals of cinnamic acid that have separated. Repeat the extraction of the residue with the filtrate at least three times, or until no more cinnamic acid is removed. Press the filter paper and crystals between blotting paper, dry in a desiccator over *sulphuric acid* and weigh. Add to the weight of the crystals so ascertained 0·03 gramme (representing the average amount of cinnamic acid remaining dissolved in the aqueous liquid). The total weight is not less than 0·375 gramme.

SUCCUS LIMONIS

Lemon Juice

Lemon Juice is the freshly expressed juice of the ripe fruit of *Citrus Medica*, *Linn.*, var. *β. Limonum*, *Hook. f.*

Characters and Tests.—A slightly turbid, yellowish

liquid. Taste sharply acid. Specific gravity 1·030 to 1·040. 20 millilitres require for neutralisation not less than 20 and not more than 25·7 millilitres of *N/1 solution of sodium hydroxide*, corresponding to a proportion of not less than 7 and not more than 9 grammes of citric acid in 100 millilitres. The residue obtained on evaporation, dried at 110°, yields not more than 3 per cent. of ash.

100 millilitres of Lemon Juice are neutralised by about 11·4 grammes of Potassium Bicarbonate (or 110 minims by 11½ grains), by about 9·5 grammes of Sodium Bicarbonate (or 110 minims by 9½ grains), and by about 16·5 grammes of Sodium Carbonate (or 110 minims by about 16½ grains).

SUCCUS SCOPARII

Juice of Broom

Bruise fresh Broom Tops ; press out the juice ; to every three volumes of juice add one volume of Alcohol (90 per cent.) ; set aside for seven days ; filter.

Dose.

Metric.
4 to 8 mls.

Imperial.
1 to 2 fluid drachms.

SUCCUS TARAXACI

Juice of Taraxacum

Bruise fresh Taraxacum Root ; press out the juice ; to every three volumes of juice add one volume of Alcohol (90 per cent.) ; set aside for seven days ; filter.

Dose.

Metric.
4 to 8 mls.

Imperial.
1 to 2 fluid drachms.

SULPHONAL

Sulphonal

Sulphonal, or dimethyl - methane - diethyl - sulphone, $C_7H_{16}S_2O_4$, may be obtained by oxidising mercaptol.

Characters and Tests.—Colourless prismatic crystals. No odour; nearly tasteless. Soluble in 450 parts of cold water, in 15 parts of boiling water, and in 80 parts of alcohol (90 per cent.). Melting point 125° . Aqueous solution neutral to *litmus*. When mixed with an equal weight of *potassium cyanide* and heated, the odour of mercaptan is evolved, and when to the solution of the product in water excess of *hydrochloric acid* and a few drops of *T.Sol. of ferric chloride* are added, a reddish colour is developed. Evolves hydrogen sulphide when gradually heated with *anhydrous sodium acetate*. Yields no characteristic reactions for chlorides or sulphates. No appreciable ash.

Dose.

Metric.

6 to 20 decigrams.

Imperial.

10 to 30 grains.

SULPHUR PRÆCIPITATUM

Precipitated Sulphur

Synonym—Milk of Sulphur

Precipitated Sulphur is obtained by the action of hydrochloric acid upon a solution prepared by boiling together sulphur and lime in water.

Characters and Tests.—A greyish-yellow, soft powder, free from grittiness and from the odour of hydrogen sulphide. Under the microscope it is seen to consist of opaque globules, without any admixture of crystalline matter,

Burns with a blue flame forming sulphur dioxide, leaving not more than 0·5 per cent. of fixed residue. When 10 grammes are mixed with *water*, filtered, and thoroughly washed, the mixed filtrate and washings require for neutralisation not more than 2 millilitres of *N/10 solution of sodium hydroxide* (limit of acidity). *Arsenic limit* 5 parts per million.

Dose.

Metric.

12 to 40 decigrams.

Imperial.

20 to 60 grains.

SULPHUR SUBLIMATUM

Sublimed Sulphur

Synonym—Flowers of Sulphur

Sublimed Sulphur may be obtained from native sulphur or sulphides.

Characters and Tests.—A slightly gritty powder of a bright greenish-yellow colour. Odourless and tasteless. Under the microscope it is seen to consist of almost opaque irregular particles without any admixture of crystalline matter. Burns with a blue flame, forming sulphur dioxide and leaving no appreciable residue. When 10 grammes are mixed with *water*, filtered, and thoroughly washed, the mixed filtrate and washings require for neutralisation not more than 5 millilitres of *N/10 solution of sodium hydroxide* (limit of acidity). *Arsenic limit* 5 parts per million.

Dose.

Metric.

12 to 40 decigrams.

Imperial.

20 to 60 grains.

SUPPOSITORIA ACIDI CARBOLICI

Phenol Suppositories

Phenol	0·8 gramme
White Beeswax	0·5 gramme
Oil of Theobroma	{ a sufficient quantity for twelve suppositories each weighing about one gramme

Dissolve the Phenol in the Oil of Theobroma, previously melted, add the White Beeswax and pour the melted mixture into suitable moulds; or let the mixture cool and then divide it into twelve equal parts, and press each into a conical or other convenient form for a suppository.

Each of these Suppositories contains 0·067 gramme (about 1 grain) of Phenol.

See Appendix XII, page . . . , Suppositoria.

SUPPOSITORIA ACIDI TANNICI

Tannic Acid Suppositories

Tannic Acid	2·4 grammes
Oil of Theobroma	{ a sufficient quantity for twelve suppositories each weighing about one gramme

Melt the Oil of Theobroma; triturate the Tannic Acid intimately with a little of the Oil, and add to the remainder; stir well; as the mixture begins to thicken pour it into suitable moulds; or let the mixture cool and then divide it into twelve equal parts, and press each into a conical or other convenient form for a suppository.

Each of these Suppositories contains 0·2 gramme (about 3 grains) of Tannic Acid.

See Appendix XII, page . . . , Suppositoria.

SUPPOSITORIA BELLADONNÆ

Belladonna Suppositories

Liquid Extract of Belladonna	. . .	1.7 millilitres
Oil of Theobroma	{	a sufficient quantity for twelve suppositories each weighing about one gramme

Evaporate Liquid Extract of Belladonna to a syrupy consistence; mix with the Oil of Theobroma, previously melted; as the mixture begins to thicken pour it into suitable moulds; or let the mixture cool and then divide it into twelve equal parts, and press each into a conical or other convenient form for a suppository.

Each of these Suppositories contains, approximately, 0.001 gramme (about $\frac{1}{60}$ grain) of the alkaloids of Belladonna Root.

See Appendix XII, page , Suppositoria.

SUPPOSITORIA GLYCERINI

Glycerin Suppositories

Gelatin, cut small		14 grammes
Glycerin		70 grammes
Distilled Water		a sufficient quantity

Soak the Gelatin in the Distilled Water for five minutes, or until thoroughly softened; drain well, add the Glycerin, dissolve on a water-bath and evaporate until the mixture weighs one hundred grammes. Pour the product into suitable moulds having capacities equal to two, four or eight grammes of the Suppository, or of such other capacities as may be required.

Each of these Suppositories contains 70 per cent. of Glycerin.

SUPPOSITORIA IODOFORMI**Iodoform Suppositories**

Iodoform		2·4 grammes
Oil of Theobroma	{	a sufficient quantity for twelve suppositories each weighing about one gramme

Proceed as directed for Tannic Acid Suppositories.

Each of these Suppositories contains 0·2 gramme (about 3 grains) of Iodoform.

See Appendix XII, page , Suppositoria.

SUPPOSITORIA MORPHINÆ**Morphine Suppositories**

Morphine Hydrochloride		0·2 gramme
Oil of Theobroma	{	a sufficient quantity for twelve suppositories each weighing about one gramme

Proceed as directed for Tannic Acid Suppositories.

Each of these Suppositories contains 0·017 gramme (about $\frac{1}{4}$ grain) of Morphine Hydrochloride.

See Appendix XII, page , Suppositoria.

SUPPOSITORIA PLUMBI COMPOSITA**Compound Lead Suppositories**

Lead Acetate, in powder		2·4 grammes
Opium, in powder.		0·8 gramme
Oil of Theobroma	{	a sufficient quantity for twelve suppositories each weighing about one gramme

Proceed as directed for Tannic Acid Suppositories.

Each of these Suppositories contains 0·2 gramme (about 3 grains) of Lead Acetate, and 0·067 gramme (about 1 grain) of Opium.

See Appendix XII, page , Suppositoria.

SYRUPUS

Syrup

Refined Sugar	1000 grammes
Distilled Water sufficient to produce	1500 grammes

Heat together until dissolved; add sufficient boiling Distilled Water to produce the required weight.

Tests.—Specific gravity 1·330. *Optical rotation* + 56° to + 58°.

SYRUPUS ACIDI HYDRIODICI

Syrup of Hydriodic Acid

Diluted Hydriodic Acid	100 grammes
Distilled Water	50 millilitres
Syrup sufficient to produce	1000 millilitres

Mix.

Dose.

Metric.
2 to 4 mls.

Imperial.
 $\frac{1}{2}$ to 1 fluid drachm.

SYRUPUS AROMATICUS

Aromatic Syrup

Tincture of Orange	250 millilitres
Cinnamon Water	250 millilitres
Syrup	500 millilitres

Mix the Tincture of Orange and Cinnamon Water ; shake the mixture with a little *powdered talc* ; filter ; add the Syrup.

Dose.

Metric.
2 to 4 mils.

Imperial.
 $\frac{1}{2}$ to 1 fluid drachm.

SYRUPUS AURANTII

Syrup of Orange

Tincture of Orange . . .	125 millilitres
Syrup sufficient to produce . . .	1000 millilitres

Mix.

Dose.

Metric.
2 to 4 mils.

Imperial.
 $\frac{1}{2}$ to 1 fluid drachm.

SYRUPUS AURANTII FLORIS

Syrup of Orange-Flower

Orange-flower water of commerce, undiluted . . .	150 millilitres
Refined Sugar . . .	300 grammes
Syrup sufficient to produce . . .	1000 millilitres

Mix the orange-flower water with the Refined Sugar in a closed vessel ; stand in a moderately warm place, shaking occasionally till dissolved ; then add sufficient Syrup to produce the required volume.

Dose.

Metric.
2 to 4 mils.

Imperial.
 $\frac{1}{2}$ to 1 fluid drachm.

SYRUPUS CALCII LACTOPHOSPHATIS**Syrup of Calcium Lactophosphate**

Calcium Lactate	75·0 grammes
Concentrated Phosphoric Acid	45·5 millilitres
Orange-flower water of commerce, undiluted	25·0 millilitres
Refined Sugar	700·0 grammes
Distilled Water sufficient to produce	1000·0 millilitres

Mix the Calcium Lactate with four hundred millilitres of the Distilled Water, add the Concentrated Phosphoric Acid and stir until dissolved, then add the orange-flower water, dissolve the Refined Sugar in the mixture without the aid of heat and add sufficient Distilled Water to produce the required volume; filter.

<i>Dose.</i>	
<i>Metric.</i>	<i>Imperial.</i>
2 to 4 mls.	$\frac{1}{2}$ to 1 fluid drachm.

SYRUPUS CASCARÆ AROMATICUS**Aromatic Syrup of Cascara**

Liquid Extract of Cascara	
Sagrada	400 millilitres
Tincture of Orange	100 millilitres
Alcohol (90 per cent.)	50 millilitres
Cinnamon Water	150 millilitres
Syrup sufficient to produce	1000 millilitres

Mix.

<i>Dose.</i>	
<i>Metric.</i>	<i>Imperial.</i>
2 to 8 mls.	$\frac{1}{2}$ to 2 fluid drachms.

SYRUPUS CHLORAL

Syrup of Chloral

Chloral Hydrate	200 grammes
Distilled Water	200 millilitres
Syrup sufficient to produce . .	1000 millilitres

Dissolve the Chloral Hydrate in the Distilled Water ;
add sufficient Syrup to produce the required volume.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
2 to 8 mls.	$\frac{1}{2}$ to 2 fluid drachms.

5 millilitres of this Syrup contain 1 gramme of Chloral Hydrate ;
1 fluid drachm contains 10·9 grains.

*

SYRUPUS CODEINÆ PHOSPHATIS

Syrup of Codeine Phosphate

Codeine Phosphate	5 grammes
Distilled Water	15 millilitres
Syrup sufficient to produce . .	1000 millilitres

Dissolve the Codeine Phosphate in the Distilled Water ;
add sufficient Syrup to produce the required volume.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
2 to 8 mls.	$\frac{1}{2}$ to 2 fluid drachms.

5 millilitres of this Syrup contain 0·025 gramme of Codeine
Phosphate ; 1 fluid drachm contains 0·27 grain.

*

SYRUPUS FERRI IODIDI

Syrup of Ferrous Iodide

Iron, in wire	15.0 grammes
Iodine	41.4 grammes
Distilled Water	75.0 millilitres
Glucose	100.0 grammes
Syrup sufficient to produce . .	1000.0 grammes

Add the Iron and the Iodine to fifty millilitres of the Distilled Water in a flask ; shake occasionally, cooling if necessary. When the reaction is completed add the Glucose, heat on a water-bath for five minutes, and while still hot filter into a tared vessel containing part of the Syrup. Rinse the flask and wash the filter-paper with the remaining twenty-five millilitres of the Distilled Water heated to boiling ; then add sufficient Syrup to produce the required weight.

Test.—When 5 grammes of the Syrup are diluted with 20 millilitres of *water*, acidified with *nitric acid* and mixed with 20 millilitres of *N/10 solution of silver nitrate*, not less than 3.5 and not more than 4.2 millilitres of *N/10 solution of ammonium thiocyanate* are required to produce a permanent red coloration, *solution of ferric sulphate* being used as indicator, corresponding to not less than 4.9 and not more than 5.1 grammes of ferrous iodide in 100 grammes of the Syrup.

*Dose.**Metric.*

2 to 4 mls.

Imperial. $\frac{1}{2}$ to 1 fluid drachm.

Four millilitres of this Syrup contain about 0.27 gramme of ferrous iodide ; 1 fluid drachm contains $3\frac{1}{2}$ grains. It is of the strength required by the International Agreement, and is approximately two-thirds of the strength of the corresponding preparation of the British Pharmacopœia of 1898.

*

SYRUPUS FERRI PHOSPHATIS

Syrup of Ferrous Phosphate

Iron, in wire	8·6 grammes
Concentrated Phosphoric Acid	62·5 millilitres
Syrup	700·0 millilitres
Distilled Water sufficient to produce	1000·0 millilitres

Dilute the Concentrated Phosphoric Acid with an equal volume of Distilled Water in a small flask; add the Iron and heat very gently until dissolved. Filter into the Syrup, and pass sufficient Distilled Water through the filter to produce the required volume.

*Dose.**Metric.*

2 to 4 mls.

Imperial. $\frac{1}{2}$ to 1 fluid drachm.

4 millilitres of this Syrup contain 0·07 gramme of anhydrous ferrous phosphate; 1 fluid drachm contains 1 grain.

SYRUPUS FERRI PHOSPHATIS CUM
QUININA ET STRYCHNINASyrup of Phosphate of Iron with Quinine and
Strychnine

Iron, in wire	8·60 grammes
Concentrated Phosphoric Acid	62·50 millilitres
Strychnine, in powder	0·57 gramme
Quinine Sulphate	14·80 grammes
Syrup	700·00 millilitres
Distilled Water sufficient to produce	1000·00 millilitres

Dilute the Concentrated Phosphoric Acid with an equal

volume of Distilled Water in a small flask; add the Iron and heat very gently until dissolved; add the solution to the Strychnine and Quinine Sulphate previously triturated with thirty millilitres of the Distilled Water; when solution is complete filter into the Syrup and pass sufficient Distilled Water through the filter to produce the required volume.

*Dose.**Metric.*

2 to 4 mls.

Imperial. $\frac{1}{2}$ to 1 fluid drachm.

4 millilitres of this Syrup contain 0·07 gramme of anhydrous ferrous phosphate, 0·059 gramme of Quinine Sulphate, and 0·0022 gramme of Strychnine; one fluid drachm contains 1 grain of anhydrous ferrous phosphate, $\frac{4}{5}$ grain of Quinine Sulphate, and $\frac{1}{32}$ grain of Strychnine.

SYRUPUS GLUCOSI

Syrup of Glucose

Glucose	25 grammes
Syrup	50 grammes

Mix, by the aid of gentle heat.

SYRUPUS LIMONIS

Syrup of Lemon

Fresh Lemon Peel, in thin slices	
or grated	20 grammes
Alcohol (90 per cent.)	a sufficient quantity
Lemon Juice	500 millilitres
Refined Sugar	760 grammes

Macerate the Lemon Peel in thirty millilitres of the

Alcohol for seven days ; press ; filter ; add sufficient of the Alcohol to produce forty millilitres. In the Lemon Juice, clarified by subsidence or filtration, dissolve the Refined Sugar by the aid of gentle heat ; cool ; add the forty millilitres of alcoholic liquid ; mix.

Dose.

Metric.
2 to 4 mls.

Imperial.
 $\frac{1}{2}$ to 1 fluid drachm.

See Appendix XII, page • , Limonis Cortex Siccatus.

SYRUPUS PRUNI VIRGINIANÆ

Syrup of Wild Cherry

Synonym—Syrup of Virginian Prune

Wild Cherry Bark, in No. 20	
powder	150 grammes
Refined Sugar, in coarse powder .	750 grammes
Glycerin	65 millilitres
Distilled Water sufficient to	
produce	1000 millilitres

Moisten the Wild Cherry Bark with Distilled Water ; set aside for twenty-four hours in a closed vessel ; pack in a percolator ; percolate with Distilled Water until four hundred and fifty millilitres have been collected ; dissolve the Refined Sugar in the liquid, without heat ; add the Glycerin and sufficient Distilled Water to produce the required volume.

Dose.

Metric.
2 to 4 mls.

Imperial.
 $\frac{1}{2}$ to 1 fluid drachm.

SYRUPUS RHEI

Syrup of Rhubarb

Rhubarb, in No. 20 powder	. 70.0 grammes
Oil of Coriander	. . . 0.5 millilitre
Refined Sugar	. . . 840.0 grammes
Alcohol (90 per cent.)	. . . 280.0 millilitres
Distilled Water, sufficient to produce	. . . 1000.0 millilitres

Mix two hundred and seventy millilitres of the Alcohol with three times its volume of Distilled Water. Moisten the Rhubarb with seventy millilitres of the mixture and set aside for twenty-four hours in a closed vessel; pack in a percolator; pass the remainder of the diluted alcohol slowly through the moistened powder; evaporate the percolate to four hundred and seventy-five grammes; filter; dissolve the Refined Sugar in the filtrate by the aid of heat; cool; add the Oil of Coriander dissolved in ten millilitres of the Alcohol; mix, and finally add sufficient Distilled Water to produce the required volume.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
2 to 8 mls.	$\frac{1}{2}$ to 2 fluid drachms.

SYRUPUS RHŒADOS

Syrup of Red-Poppy

Red-Poppy Petals	. . . 260 grammes
Refined Sugar	. . . 720 grammes
Alcohol (90 per cent.)	. . . 50 millilitres
Distilled Water sufficient to produce	. . . 1000 millilitres

Add the Red-Poppy Petals gradually to four hundred

millilitres of Distilled Water kept hot upon a water-bath; stir frequently, and afterwards, the vessel being removed, infuse for twelve hours. Then press out the liquid; strain; add the Refined Sugar, and dissolve by the aid of heat. When nearly cold, add the Alcohol, and sufficient Distilled Water to produce the required volume.

*Dose.**Metric.*

2 to 4 mils.

Imperial. $\frac{1}{2}$ to 1 fluid drachm.

See Appendix XII, page , Syrupus Rhoæalos.

SYRUPUS ROSÆ

Syrup of Rose

Dried Red-Rose Petals . . . 50 grammes

Refined Sugar . . . a sufficient quantity

Distilled Water, boiling . . . 500 millilitres

Infuse the Red-Rose Petals in the Distilled Water for two hours; strain; press; heat the infusion to the boiling point; filter; add to the filtrate twice its weight of Refined Sugar and dissolve by the aid of heat.

*Dose.**Metric.*

2 to 4 mils.

Imperial. $\frac{1}{2}$ to 1 fluid drachm.

SYRUPUS SCILLÆ

Syrup of Squill

Vinegar of Squill. . . . 175 millilitres

Refined Sugar 650 grammes

Distilled Water sufficient to
produce 1000 grammes

Mix the Vinegar of Squill with an equal volume of Distilled Water. In the mixture dissolve the Refined Sugar by the aid of gentle heat; add sufficient Distilled Water to produce the required weight.

*Dose.**Metric.*

2 to 4 mls.

Imperial. $\frac{1}{2}$ to 1 fluid drachm.

SYRUPUS SENNÆ

Syrup of Senna

Senna Leaves	440·0 grammes
Oil of Coriander	0·2 millilitre
Alcohol (90 per cent.)	2·0 millilitres
Refined Sugar	540·0 grammes
Alcohol (20 per cent.)	760·0 millilitres

Moisten the Senna Leaves with four hundred and forty millilitres of the Alcohol (20 per cent.); pack tightly in a vessel which can afterwards be closed; set aside for three days; press strongly; reserve the liquid obtained; break up the marc; moisten it with one hundred and sixty millilitres of the Alcohol (20 per cent.); set aside for twenty-four hours; press strongly; add the liquid obtained to the portion previously reserved; break up the marc; mix it with the remainder of the Alcohol (20 per cent.); set aside for three hours; press again; evaporate the resulting liquid until it is reduced to such a volume that when added to the reserved liquid the whole shall measure four hundred and forty millilitres. Mix the evaporated liquid with the reserved liquid; heat the product in a covered vessel to 82° for a few minutes; set aside for twenty-four hours; filter, and pass Distilled Water through the filter until the filtrate measures four hundred and forty millilitres; add the Refined Sugar, and dissolve in a covered vessel by the aid of gentle heat; cool; add the Oil of Coriander dissolved in the Alcohol (90 per cent.); mix.

*Dose.**Metric.*

2 to 8 mils.

Imperial. $\frac{1}{2}$ to 2 fluid drachms.**SYRUPUS TOLUTANUS****Syrup of Balsam of Tolu**

Balsam of Tolu	25 grammes
Refined Sugar	660 grammes
Distilled Water sufficient to produce	1000 grammes

Add four hundred grammes of the Distilled Water, boiling, to the Balsam of Tolu; cover lightly and heat on a water-bath for half an hour, stirring frequently. Remove; add Distilled Water, if necessary, so that the liquid, when cold, shall measure four hundred millilitres. Filter the solution, add the Refined Sugar, dissolve by the aid of a water-bath, and finally add sufficient Distilled Water to produce the required weight.

*Dose.**Metric.*

2 to 4 mils.

Imperial. $\frac{1}{2}$ to 1 fluid drachm.**SYRUPUS URGINEÆ****Syrup of Urginea**

Vinegar of Urginea	175 millilitres
Refined Sugar	650 grammes
Distilled Water sufficient to produce	1000 grammes

Mix the Vinegar of Urginea with an equal volume of Distilled Water. In the mixture dissolve the Refined Sugar by the aid of gentle heat; add sufficient Distilled Water to produce the required weight.

*Dose.**Metric.*
2 to 4 mils.*Imperial.*
 $\frac{1}{2}$ to 1 fluid drachm.

SYRUPUS ZINGIBERIS

Syrup of Ginger

Ginger, in fine powder 25 grammes
Alcohol (90 per cent.) . . . a sufficient quantity
Syrup sufficient to produce . . . 1000 millilitres

Prepare fifty millilitres of a strong tincture of the Ginger by the *process of percolation* with the Alcohol. To this add sufficient of the Syrup to produce the required volume.

*Dose.**Metric.*
2 to 4 mils.*Imperial.*
 $\frac{1}{2}$ to 1 fluid drachm.

TABELLÆ TRINITRINI

Trinitrin Tablets

Synonym—Tablets of Nitroglycerin

Trinitrin Tablets are tablets of chocolate each weighing 0.300 gramme and containing 0.0005 gramme (half a milligram) of the trinitroglycerin of commerce.

Dose.

1 or 2 tablets.

Each of these Tablets contains 0.5 milligrams (approximately $\frac{1}{100}$ grain) of the trinitroglycerin of commerce,

TAMARINDUS

Tamarinds

Tamarinds are the fruits of *Tamarindus indica*, *Linn.*, freed from the brittle outer part of the pericarp and preserved with sugar.

Characters and Test.—A reddish-brown, moist, sugary mass, containing strong branched fibres, and brown shining seeds, each enclosed in a tough membrane. Taste agreeable, subacid. The pulp yields no *reaction* for copper.

TARAXACI RADIX

Taraxacum Root

Taraxacum Root is the fresh and the dried root of *Taraxacum officinale*, *Wiggers*. Collected in the autumn.

Characters.—Fresh root frequently three decimetres or more long, and twelve millimetres or more thick, smooth and yellowish-brown externally, whitish within. Fracture short, a milky juice exuding from faint concentric rings on the fractured surface. Dried root more or less shrivelled, deeply wrinkled longitudinally, dark brown or nearly black. Fracture short, the exposed surface showing a small yellow, porous wood, surrounded by a thick nearly white cortex exhibiting a variable number of irregular concentric rings. Inodorous; taste bitter.

TEREBENUM

Terebene

Terebene is a mixture of dipentene and other hydrocarbons, obtained by shaking oil of turpentine with successive quantities of sulphuric acid until optically inactive, and then distilling in a current of steam.

Characters and Tests.—A colourless liquid. Agreeable odour; taste aromatic and terebinthinate. Specific gravity from 0.862 to 0.866. Soluble in 5 parts of *alcohol* (90 per cent.). *Optical rotation* at 15° between + 1° and — 1°. Distils between 156° and 180°, leaving only a slight viscid residue (absence of excess of resin). Not more than 15 per cent. distils below 165°.

Dose.

Metric.
3 to 10 decimils.

Imperial.
5 to 15 minims.

TEREBINTHINA CANADENSIS

Canada Turpentine

Canada Turpentine is the oleo-resin obtained from *Abies balsamea*, *Mill.*

Characters and Test.—Pale yellow or greenish-yellow, transparent, viscous. Agreeable terebinthinate odour; taste feebly bitter and acrid. Dries very slowly to a transparent varnish when exposed to the air. Solidifies when mixed with about one-sixth of its weight of *heavy magnesia* moistened with a little *water*.

THEOBROMINÆ ET SODII SALICYLAS

Salicylate of Theobromine and Sodium

= *Diuretin*

Salicylate of Theobromine and Sodium, $\text{Na}_2\text{C}_{14}\text{H}_{12}\text{N}_4\text{O}_5$, may be obtained by combining sodium hydroxide, theobromine, and sodium salicylate in molecular proportions. Should be preserved in stoppered, amber-coloured bottles.

Characters and Tests.—A white amorphous powder. No odour; taste sweetish and alkaline. Soluble in 1 part of *water*; soluble in *alcohol* (90 per cent.); insoluble in

ether, and in *chloroform*. Aqueous solution (1 in 4) alkaline to *litmus* and colourless; when acidified with *acetic acid* gives a violet coloration with *T.Sol. of ferric chloride*; when neutralised with *hydrochloric acid* gives a white precipitate of theobromine, and the filtrate from this, on the addition of more of the acid, gives a precipitate of salicylic acid; the precipitated theobromine, washed with a little *water*, gives, when treated with *potassium chlorate* and *hydrochloric acid* as described under 'Caffeina,' a purple colour. The aqueous solution also gives precipitates with *T.Sol. of mercuric chloride*, with solutions of alkaloidal salts, and with *N/10 solution of iodine*. Yields not less than 40 per cent. of theobromine and 35 per cent. of salicylic acid when tested by the following process:—

Dissolve 2 grammes of the Salicylate of Theobromine and Sodium in 10 millilitres of warm *water*, slightly acidify with *diluted hydrochloric acid*, add *solution of ammonia* until the reaction is faintly alkaline, and set aside for three hours at about 15°, stirring frequently. Collect the precipitated theobromine on a tared filter, wash twice with 10 millilitres of *water*, dry at 100°, and weigh the precipitate; it weighs not less than 0·8 gramme. Acidify the filtrate and washings with *hydrochloric acid*, shake with two successive quantities, each of 10 millilitres, of *ether*, evaporate the mixed ethereal solutions, dry the residue at 60°, and weigh; it weighs not less than 0·7 gramme.

Dose.

Metric.
6 to 12 decimils.

Imperial.
10 to 20 grains.

THYMOL

Thymol

Thymol, or isopropylmetacresol, $C_{10}H_{14}O$, is a crystalline substance obtained from the volatile oils of *Thymus vulgaris*, *Linn.*, *Monarda punctata*, *Linn.*, and *Carum copticum*,

Benth. and Hook. f. Purified by recrystallisation from alcohol.

Characters and Tests.—Large, oblique prismatic crystals, sinking in water at 15·5°. Melting point from 50° to 51°. Completely volatilised on a water-bath. Odour recalling that of thyme; taste pungent, aromatic. Almost insoluble in *water*; freely soluble in *alcohol* (90 per cent.), in *ether*, and in *solution of sodium hydroxide*. A solution of Thymol in half its volume of *glacial acetic acid*, warmed with an equal volume of *sulphuric acid*, assumes a reddish-violet colour.

Dose.

Metric.
3 to 12 centigrams.

Imperial.
 $\frac{1}{2}$ to 2 grains.

THYROIDEUM SICCUM

Dry Thyroid

Dry Thyroid is a powder prepared from the fresh and healthy thyroid glands of the sheep.

Remove the external fat and connective tissue from the thyroid glands, taken from the sheep immediately after killing. Cut the glands across, and reject any which contain cysts, are hypertrophied, or are otherwise abnormal. Mince finely the healthy glands, and dry at a temperature of 30° to 40°; powder the dried product; remove all fat by washing with *petroleum spirit*; and again dry the residue.

Characters.—A light, dull-brown powder, with a very faint meat-like odour and taste, and free from any flavour of putrescence. Liable to become damp on exposure to the air, and to deteriorate.

Dose.

Metric.
3 to 25 centigrams.

Imperial.
 $\frac{1}{2}$ to 4 grains.

TINCTURA ACONITI

Tincture of Aconite

Tincture of Aconite contains in 100 millilitres 0·04 gramme of the ether-soluble alkaloids of Aconite Root.

Aconite Root, in No. 40 powder . 150 grammes
Alcohol (70 per cent.) . a sufficient quantity

Moisten the powder with seventy-five millilitres of the Alcohol, and produce, by the *percolation process*, one thousand millilitres of a strong tincture. Determine the proportion of ether-soluble alkaloids present in this strong tincture, by evaporating one hundred millilitres to dryness in a shallow porcelain evaporating basin and proceeding as directed under 'Aconiti Radix.' Dilute the remainder of the strong tincture with sufficient of the Alcohol to produce a Tincture of Aconite containing 0·04 gramme of ether-soluble alkaloids in 100 millilitres of the Tincture.

Test.—Examined by the foregoing process Tincture of Aconite is found to contain in 100 millilitres 0·04 gramme of the ether-soluble alkaloids of Aconite Root. *Limit of error* 0·002 gramme in excess or defect.

*Dose.**Metric.*

12 to 30 centimils.

Imperial.

2 to 5 minims.

This Tincture is of approximately the same strength as the Tincture of Aconite of the International Agreement, and about twice as strong as the corresponding preparation of the British Pharmacopœia of 1898.



TINCTURA ALSTONIAE

Tincture of Alstonia

Alstonia, in No. 20 powder . 125 grammes
Alcohol (60 per cent.) . 1000 millilitres

Prepare by the *maceration process*.

Dose.

Metric.
2 to 4 mils.

Imperial.
 $\frac{1}{2}$ to 1 fluid drachm.

TINCTURA ARNICÆ FLORUM**Tincture of Arnica Flowers**

Arnica Flowers, in No. 20

powder 100 grammes

Alcohol (45 per cent.) sufficient
to produce 1000 millilitres

Moisten the powder with two hundred millilitres of the Alcohol, and complete the *percolation process*.

Dose.

Metric.
2 to 4 mils.

Imperial.
 $\frac{1}{2}$ to 1 fluid drachm.

TINCTURA ASAFETIDÆ**Tincture of Asafetida**

Asafetida, bruised 200 grammes

Alcohol (70 per cent.) sufficient
to produce 1000 millilitres

Macerate the Asafetida in a closed vessel with seven hundred and fifty millilitres of the Alcohol for seven days, shaking occasionally; filter; pass sufficient of the Alcohol through the filter to produce the required volume.

Dose.

Metric.
2 to 4 mils.

Imperial.
 $\frac{1}{2}$ to 1 fluid drachm.

TINCTURA AURANTII

Tincture of Orange

Fresh Bitter-Orange Peel, cut

small	250 grammes
Alcohol (90 per cent)	1000 millilitres

Prepare by the *maceration process*.

Dose.

Metric.
2 to 4 mils.

Imperial.
 $\frac{1}{2}$ to 1 fluid drachm.

TINCTURA BELLADONNÆ

Tincture of Belladonna

Tincture of Belladonna contains in 100 millilitres 0.035 gramme of the alkaloids of Belladonna Leaves.

Belladonna Leaves, dried and	
in No. 20 powder	100 grammes
Alcohol (70 per cent.) sufficient	
to produce	1000 millilitres

Moisten the Belladonna Leaves with one hundred millilitres of the Alcohol, and complete the *percolation process*. Determine the proportion of alkaloids contained in the tincture so prepared by the following process :—

Evaporate 100 millilitres in an evaporating basin on a water-bath until it measures about 10 millilitres, add, if necessary, sufficient *alcohol* to dissolve any separated substance, and transfer to a separator, rinsing the dish with a

little *water*. Add 10 millilitres of *water*, 20 millilitres of *chloroform*, and 2 millilitres of *solution of ammonia*. Shake well and separate the chloroformic layer. Repeat the extraction with two successive portions of 10 millilitres of *chloroform*. Mix the chloroformic solutions, and shake them with 10 millilitres of *N/1 solution of sulphuric acid* diluted with twice its volume of *water*. Separate the chloroformic solution. Repeat the shaking with a further 10 millilitres of the acidified *water*. Mix the acid solutions, add 20 millilitres of *chloroform* and 4 millilitres of *solution of ammonia*. Shake well, draw off the chloroformic solution into a beaker, and repeat the extraction with two further portions, each of 10 millilitres, of *chloroform*. Allow the mixed chloroformic solutions to evaporate, dry the residue on a water-bath for thirty minutes, dissolve it in 10 millilitres of *N/20 solution of sulphuric acid* and titrate with *N/20 solution of sodium hydroxide*, using *tincture of cochineal* as indicator. Deduct the number of millilitres of alkaline solution required from 10, and multiply the difference by 0·01446; the product will be the weight in grammes of the alkaloids contained in 100 millilitres of the Tincture. This quantity should be not less than 0·035 gramme. Should the tincture contain more than this proportion it must be diluted with the necessary quantity of Alcohol (70 per cent.)

Test.—Examined by the foregoing process, Tincture of Belladonna is found to contain in 100 millilitres 0·035 gramme of the alkaloids of Belladonna Leaves. *Limit of error* 0·002 gramme in excess or defect.

Dose.

Metric.

3 to 10 decimils.

Imperial.

5 to 15 minims.

This Tincture contains seven-tenths of the proportion of alkaloids contained in the Tincture of Belladonna of the British Pharmacopœia of 1893. It may be used when the Tincture of Belladonna of the International Agreement is required.

*

TINCTURA BENZOINI COMPOSITA**Compound Tincture of Benzoin***Synonym*—Friars' Balsam

Benzoin, in coarse powder . . .	100 grammes
Prepared Storax	75 grammes
Balsam of Tolu	25 grammes
Aloes	20 grammes
Alcohol (90 per cent.) sufficient to produce	1000 millilitres

Macerate the Benzoin, Storax, Balsam of Tolu, and Aloes with eight hundred millilitres of the Alcohol in a closed vessel, for two days, shaking occasionally; filter; pass sufficient of the Alcohol through the filter to produce the required volume.

Dose.

Metric.
2 to 4 mls.

Imperial.
 $\frac{1}{2}$ to 1 fluid drachm.

TINCTURA BERBERIDIS**Tincture of Berberis**

Berberis, in No. 60 powder . . .	100 grammes
Alcohol (60 per cent.) sufficient to produce	1000 millilitres

Moisten the powder with one hundred millilitres of the Alcohol, and complete the *percolation process*.

Dose.

Metric.
2 to 4 mls.

Imperial.
 $\frac{1}{2}$ to 1 fluid drachm.

TINCTURA BUCHU**Tincture of Buchu**

Buchu Leaves, in No. 20 powder . 200 grammes
 Alcohol (60 per cent.) sufficient
 to produce 1000 millilitres

Moisten the powder with two hundred millilitres of the Alcohol, and complete the *percolation process*.

Dose.

Metric.
 2 to 4 mls.

Imperial
 $\frac{1}{2}$ to 1 fluid drachm.

TINCTURA CALUMBÆ**Tincture of Calumba**

Calumba Root, in No. 20 powder. 100 grammes
 Alcohol (60 per cent.) 1000 millilitres

Prepare by the *maceration process*.

Dose.

Metric.
 2 to 4 mls.

Imperial.
 $\frac{1}{2}$ to 1 fluid drachm.

TINCTURA CAMPHORÆ COMPOSITA**Compound Tincture of Camphor**

Synonyms—Paregoric ; Paregoric Elixir

Tincture of Opium 50 millilitres
 Benzoic Acid 5 grammes
 Camphor 3 grammes
 Oil of Anise 3 millilitres
 Alcohol (60 per cent.) sufficient
 to produce 1000 millilitres

Dissolve the Benzoic Acid, Camphor, and Oil of Anise in nine hundred millilitres of the Alcohol; add the Tincture of Opium and sufficient of the Alcohol to produce the required volume; filter if necessary.

*Dose.**Metric.*

2 to 4 mils.

Imperial. $\frac{1}{2}$ to 1 fluid drachm.

This Compound Tincture contains in each millilitre 0·5 milligram (0·0005 gramme) of anhydrous morphine; and in each fluid drachm very nearly one thirty-seventh of a grain of anhydrous morphine. It contains approximately one-tenth more morphine than the Tinctura Opii Benzoica of the International Agreement, and one-tenth more than was contained in the corresponding preparation of the British Pharmacopœia, 1898.

*

TINCTURA CANNABIS INDICÆ

Tincture of Indian Hemp

Extract of Indian Hemp . . .	50 grammes
Alcohol (90 per cent.) sufficient to produce . . .	1000 millilitres

Dissolve.

*Dose.**Metric.*

3 to 10 decimils.

Imperial.

5 to 15 minims.

TINCTURA CANTHARIDINI

Tincture of Cantharidin

Cantharidin	0·1 gramme
Chloroform	10·0 millilitres
Alcohol (90 per cent.) sufficient to produce	1000·0 millilitres

Dissolve the Cantharidin in the Chloroform, and add sufficient of the Alcohol to produce the required volume.

*Dose.**Metric.*

12 to 30 centimils.

Imperial.

2 to 5 minims.

This Tincture contains approximately one-seventh of the proportion of Cantharidin contained in the *Tinctura Cantharidis* of the International Agreement; it contains approximately the same proportion of Cantharidin as the *Tinctura Cantharidis* of the British Pharmacopœia of 1898.

TINCTURA CAPSICI**Tincture of Capsicum**

Capsicum, in No. 20 powder	.	50 grammes
Alcohol (60 per cent.)	.	1000 millilitres

Prepare by the *maceration process*.

*Dose.**Metric.*

3 to 10 decimils.

Imperial.

5 to 15 minims.

TINCTURA CARDAMOMI COMPOSITA**Compound Tincture of Cardamoms**

Cardamom Seeds, in No. 20.	
powder	14 grammes
Caraway Fruit, in No. 20	
powder	14 grammes
Cinnamon Bark, in No. 20	
powder	28 grammes
Cochineal, in No. 20 powder	7 grammes
Glycerin	100 millilitres
Alcohol (45 per cent.) sufficient	
to produce	1000 millilitres

Moisten the mixed powders with fifty millilitres of the

Alcohol, and prepare, by the *percolation process*, eight hundred and fifty millilitres of tincture. Add the Glycerin and sufficient of the Alcohol to produce the required volume.

Dose.

Metric.
2 to 4 mils.

Imperial.
 $\frac{1}{2}$ to 1 fluid drachm.

TINCTURA CASCARILLÆ

Tincture of Cascarilla

Cascarilla, in No. 40 powder	.	200 grammes
Alcohol (70 per cent.) sufficient		
to produce	.	1000 millilitres

Moisten the powder with one hundred and fifty millilitres of the Alcohol, and complete the *percolation process*.

Dose.

Metric.
2 to 4 mils.

Imperial.
 $\frac{1}{2}$ to 1 fluid drachm.

TINCTURA CATECHU

Tincture of Catechu

Catechu, in coarse powder	.	200 grammes
Cinnamon Bark, bruised	.	50 grammes
Alcohol (45 per cent.)	.	1000 millilitres

Prepare by the *maceration process*.

Dose.

Metric.
2 to 4 mils.

Imperial.
 $\frac{1}{2}$ to 1 fluid drachm.

THE UNIVERSITY OF CHICAGO

1911

THE UNIVERSITY OF CHICAGO
THE UNIVERSITY OF CHICAGO
THE UNIVERSITY OF CHICAGO

THE UNIVERSITY OF CHICAGO
THE UNIVERSITY OF CHICAGO
THE UNIVERSITY OF CHICAGO

THE UNIVERSITY OF CHICAGO

THE UNIVERSITY OF CHICAGO

THE UNIVERSITY OF CHICAGO
THE UNIVERSITY OF CHICAGO
THE UNIVERSITY OF CHICAGO

THE UNIVERSITY OF CHICAGO
THE UNIVERSITY OF CHICAGO
THE UNIVERSITY OF CHICAGO

THE UNIVERSITY OF CHICAGO
THE UNIVERSITY OF CHICAGO
THE UNIVERSITY OF CHICAGO

THE UNIVERSITY OF CHICAGO

THE UNIVERSITY OF CHICAGO

THE UNIVERSITY OF CHICAGO
THE UNIVERSITY OF CHICAGO
THE UNIVERSITY OF CHICAGO

THE UNIVERSITY OF CHICAGO

THE UNIVERSITY OF CHICAGO
THE UNIVERSITY OF CHICAGO
THE UNIVERSITY OF CHICAGO

TINCTURA CHIRATÆ**Tincture of Chiretta**

Chiretta, in No. 40 powder . . .	100 grammes
Alcohol (60 per cent.) sufficient to produce	1000 millilitres

Moisten the powder with one hundred millilitres of the Alcohol, and complete the *percolation process*.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
2 to 4 mils.	$\frac{1}{2}$ to 1 fluid drachm.

**TINCTURA CHLOROFORMI ET MORPHINÆ
COMPOSITA****Compound Tincture of Chloroform and Morphine**

Chloroform	75·0 millilitres
Morphine Hydrochloride . . .	10·0 grammes
Diluted Hydrocyanic Acid . . .	50·0 millilitres
Tincture of Capsicum	25·0 millilitres
Tincture of Indian Hemp . . .	100·0 millilitres
Oil of Peppermint	1·5 millilitres
Glycerin	250·0 millilitres
Alcohol (90 per cent.) sufficient to produce	1000·0 millilitres

Mix the Chloroform, Tincture of Capsicum, Tincture of Indian Hemp, Oil of Peppermint, and Glycerin, with four hundred and fifty millilitres of the Alcohol, and dissolve the Morphine Hydrochloride in the mixture; add the Diluted Hydrocyanic Acid, and sufficient of the Alcohol to produce the required volume.

Dose.

Metric.
3 to 10 decimils.

Imperial.
5 to 15 minims.

This Compound Tincture contains in 1 millilitre 7·5 centimils of Chloroform, 1 centigram of Morphine Hydrochloride, and 5 centimils of Diluted Hydrocyanic Acid; in 10 minims $\frac{3}{4}$ minim of Chloroform, $\frac{1}{11}$ grain of Morphine Hydrochloride, and $\frac{1}{2}$ minim of Diluted Hydrocyanic Acid.

TINCTURA CINCHONÆ

Tincture of Cinchona

Tincture of Cinchona contains in 100 millilitres 1 gramme of the alkaloids of Red Cinchona Bark.

Red Cinchona Bark, in No. 40
powder 200 grammes
Alcohol (70 per cent.) . . . a sufficient quantity

Moisten the powder with two hundred millilitres of the Alcohol; set aside for seven days in a closed vessel; percolate with more of the Alcohol, until seven hundred millilitres of percolate have been collected; press the marc; add the expressed liquid to the percolate; set aside for twenty-four hours; filter.

Take ten millilitres of the strong tincture so prepared, and determine its proportion of alkaloids by the assay process described under 'Extractum Cinchonæ Liquidum.'

Add to the bulk of the strong tincture such a quantity of the Alcohol that one hundred millilitres of the resulting Tincture contain one gramme of the alkaloids of Red Cinchona Bark.

Test.—Examined by the process described under 'Extractum Cinchonæ Liquidum' Tincture of Cinchona is found to contain in 100 millilitres 1 gramme of the alka-

loids of Red Cinchona Bark. *Limit of error* 0·05 gramme in excess or defect.

Dose.

Metric.
2 to 4 mils.

Imperial.
 $\frac{1}{2}$ to 1 fluid drachm.

TINCTURA CINCHONÆ COMPOSITA

Compound Tincture of Cinchona

Compound Tincture of Cinchona contains in 100 millilitres 0·5 gramme of Red Cinchona Bark.

Dried Bitter-Orange Peel, well bruised	50 grammes
Serpentary Rhizome, in No. 40 powder	25 grammes
Cochineal, in powder	3 grammes
Tincture of Cinchona	500 millilitres
Alcohol (70 per cent.) sufficient to produce	1000 millilitres

Mix the solid ingredients with five hundred millilitres of the Alcohol; set aside in a closed vessel for seven days, shaking frequently; strain; press the marc; mix the liquids; add the Tincture of Cinchona, and sufficient of the Alcohol to produce the required volume; set aside for twenty-four hours; filter.

Test.—Examined by the process described under 'Extractum Cinchonæ Liquidum' Compound Tincture of Cinchona is found to contain in 100 millilitres 0·5 gramme of the alkaloids of Red Cinchona Bark. *Limit of error* 0·05 gramme in excess or defect.

Dose.

Metric.
2 to 4 mils.

Imperial.
 $\frac{1}{2}$ to 1 fluid drachm.

TINCTURA CINNAMOMI**Tincture of Cinnamon**

Cinnamon Bark, in No. 40

powder 200 grammes

Alcohol (70 per cent.) sufficient

to produce 1000 millilitres

Moisten the powder with two hundred millilitres of the Alcohol, and complete the *percolation process*.

*Dose.**Metric.*

2 to 4 mils.

Imperial. $\frac{1}{2}$ to 1 fluid drachm.**TINCTURA COCCI****Tincture of Cochineal**

Cochineal, in powder 100 grammes

Alcohol (45 per cent.) 1000 millilitres

Prepare by the *maceration process*.

*Dose.**Metric.*

3 to 10 decimils.

Imperial.

5 to 15 minims.

TINCTURA COLCHICI**Tincture of Colchicum**

Colchicum Seeds, in No. 30

powder 100 grammes

Alcohol (70 per cent.) sufficient

to produce 1000 millilitres

Moisten the powder with fifty millilitres of the Alcohol, and complete the *percolation process*.

Dose.

Metric.
3 to 10 decimils.

Imperial.
5 to 15 minims.

This Tincture is one-half the strength of the corresponding preparation of the British Pharmacopœia, 1898.



TINCTURA CUBEÆ

Tincture of Cubebs

Cubebs, in No. 20 powder . . . 200 grammes
Alcohol (90 per cent.) sufficient
to produce 1000 millilitres

Moisten the powder with one hundred millilitres of the Alcohol, and complete the *percolation process*.

Dose.

Metric.
2 to 4 mils.

Imperial.
 $\frac{1}{2}$ to 1 fluid drachm.

TINCTURA DATURÆ SEMINUM

Tincture of Datura Seeds

Datura Seeds, in No. 20 powder . . . 250 grammes
Alcohol (70 per cent.) sufficient
to produce 1000 millilitres

Moisten the bruised Datura Seeds with two hundred millilitres of the Alcohol, and complete the *percolation process*.

Dose.

Metric.
3 to 10 decimils.

Imperial.
5 to 15 minims.

TINCTURA DIGITALIS**Tincture of Digitalis**

Digitalis Leaves, in No. 20

powder 100 grammes

Alcohol (70 per cent.) sufficient

to produce 1000 millilitres

Moisten the powder with one hundred millilitres of the Alcohol, and complete the *percolation process*.

Dose.

Metric.
3 to 10 decimils.

Imperial.
5 to 15 minims.

This Tincture is of approximately the same strength as the Tinctura Digitalis of the International Agreement, and is four-fifths of the strength of the corresponding preparation of the British Pharmacopœia, 1898.

**TINCTURA ERGOTÆ AMMONIATA****Ammoniated Tincture of Ergot**

Ergot, in No. 20 powder 250 grammes

Solution of Ammonia 100 millilitres

Alcohol (60 per cent.) sufficient

to produce 1000 millilitres

Mix the Solution of Ammonia with nine hundred millilitres of the Alcohol ; moisten the powder with one hundred millilitres of this mixture, and percolate with the remainder ; press the marc ; mix the expressed liquid with the percolate ; add sufficient of the Alcohol to produce the required volume ; set aside for twenty-four hours ; filter.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
2 to 4 mils.	$\frac{1}{2}$ to 1 fluid drachm.

TINCTURA FERRI PERCHLORIDI

Tincture of Ferric Chloride

Strong Solution of Ferric

Chloride	250 millilitres
Alcohol (90 per cent.)	250 millilitres
Distilled Water sufficient to produce	1000 millilitres

Mix.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
3 to 10 decimils.	5 to 15 minims.

TINCTURA GELSEMII

Tincture of Gelsemium

Gelsemium Root, in No. 40

powder	100 grammes
Alcohol (60 per cent.) sufficient to produce	1000 millilitres

Moisten the powder with fifty millilitres of the Alcohol, and complete the *percolation process*.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
3 to 10 decimils.	5 to 15 minims.

TINCTURA GENTIANÆ COMPOSITA**Compound Tincture of Gentian**

Gentian Root, cut small and well bruised	100.0 grammes
Dried Bitter-Orange Peel, well bruised	37.5 grammes
Cardamom Seeds, bruised	12.5 grammes
Alcohol (45 per cent.)	1000.0 millilitres

Prepare by the *maceration process*.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
2 to 4 mls.	$\frac{1}{2}$ to 1 fluid drachm.

TINCTURA GUAIACI AMMONIATA**Ammoniated Tincture of Guaiacum**

Guaiacum Resin, in powder	200 grammes
Oil of Nutmeg	3 millilitres
Oil of Lemon	2 millilitres
Strong Solution of Ammonia	75 millilitres
Alcohol (90 per cent.) sufficient to produce	1000 millilitres

Mix the Strong Solution of Ammonia with eight hundred millilitres of the Alcohol; add the Guaiacum Resin; set aside in a closed vessel for forty-eight hours, shaking frequently; filter; dissolve the Oil of Lemon and Oil of Nutmeg in the filtrate, and pass sufficient of the Alcohol through the filter to produce the required volume.

THE UNIVERSITY OF CHICAGO

CHICAGO, ILLINOIS

THE UNIVERSITY OF CHICAGO
CHICAGO, ILLINOIS
CHICAGO, ILLINOIS
CHICAGO, ILLINOIS
CHICAGO, ILLINOIS
CHICAGO, ILLINOIS

CHICAGO, ILLINOIS

CHICAGO, ILLINOIS
CHICAGO, ILLINOIS

THE UNIVERSITY OF CHICAGO

CHICAGO, ILLINOIS

CHICAGO, ILLINOIS
CHICAGO, ILLINOIS
CHICAGO, ILLINOIS
CHICAGO, ILLINOIS
CHICAGO, ILLINOIS
CHICAGO, ILLINOIS

CHICAGO, ILLINOIS
CHICAGO, ILLINOIS
CHICAGO, ILLINOIS
CHICAGO, ILLINOIS
CHICAGO, ILLINOIS
CHICAGO, ILLINOIS

*Dose.**Metric.*
2 to 4 mils.*Imperial.*
 $\frac{1}{2}$ to 1 fluid drachm.

TINCTURA HAMAMELIDIS

Tincture of Hamamelis

Hamamelis Bark, in No. 20

powder 100 grammes

Alcohol (45 per cent.) sufficient
to produce 1000 millilitres

Moisten the powder with fifty millilitres of the Alcohol,
and complete the *percolation process*.

*Dose.**Metric.*
2 to 4 mils.*Imperial.*
 $\frac{1}{2}$ to 1 fluid drachm.

TINCTURA HYDRASTIS

Tincture of Hydrastis

Liquid Extract of Hydrastis . . . 100 millilitres

Alcohol (60 per cent.) sufficient to
produce 1000 millilitres

Moisten the powder with one hundred millilitres of the
Alcohol, and complete the *percolation process*.

*Dose.**Metric.*
2 to 4 mils.*Imperial.*
 $\frac{1}{2}$ to 1 fluid drachm.

TINCTURA HYOSCYAMI**Tincture of Hyoscyamus**

Hyoscyamus Leaves, dried and	
in No. 20 powder . . .	100 grammes
Alcohol (70 per cent.) sufficient	
to produce . . .	1000 millilitres

Moisten the powder with one hundred millilitres of the Alcohol, and complete the *percolation process*.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
2 to 4 mils.	$\frac{1}{2}$ to 1 fluid drachm.

TINCTURA IODI FORTIS**Strong Tincture of Iodine**

Iodine	100 grammes
Potassium Iodide	60 grammes
Distilled Water	100 millilitres
Alcohol (90 per cent.) sufficient	
to produce	1000 millilitres

Dissolve the Potassium Iodide and the Iodine in the Distilled Water; add sufficient of the Alcohol to produce the required volume.

Test.—5 millilitres of the Tincture, diluted with 20 millilitres of *water*, require for complete decolorisation not less than 38.4 and not more than 39.6 millilitres of *N/10 solution of sodium thiosulphate*.

This Strong Tincture corresponds approximately with the Tinctura Iodi of the International Agreement. It contains approximately the same proportion of Iodine as the Liquor Iodi Fortis of the British Pharmacopœia, 1898.

TINCTURA IODI MITIS

Weak Tincture of Iodine

Iodine	25 grammes
Potassium Iodide	25 grammes
Distilled Water	25 millilitres
Alcohol (90 per cent.) sufficient to produce	1000 millilitres

Dissolve the Potassium Iodide and Iodine in the Distilled Water; add sufficient of the Alcohol to produce the required volume.

Test.—10 millilitres of the Tincture, diluted with 20 millilitres of *water*, require for complete decolorisation not less than 19·2 or more than 19·8 millilitres of *N/10 solution of sodium thiosulphate*.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
12 to 30 centimils.	2 to 5 minims.

This Weak Tincture contains 0·025 gramme of Iodine in each millilitre; 1 minim contains about $\frac{1}{40}$ grain. It is not identical in strength with the Tinctura Iodi of the International Agreement, which is a strong tincture containing approximately 0·09 gramme of iodine in each millilitre.

TINCTURA JALAPÆ

Tincture of Jalap

Jalap, in No. 40 powder	200 grammes
Alcohol (70 per cent.)	a sufficient quantity

Moisten the powder with one hundred millilitres of the Alcohol; pack in a percolator; gradually add more of the Alcohol until six hundred millilitres of percolate have

been collected; press the marc; add the expressed liquid to the percolate; set aside for twenty-four hours; filter.

Determine the amount of Jalap Resin present in ten millilitres of the strong tincture so prepared by the process described under 'Jalapæ Resina,' and dilute the remainder of the strong tincture with sufficient of the Alcohol to produce a Tincture of Jalap containing 1·5 grammes of the Resin in one hundred millilitres.

Test.—Treated as described under 'Jalapæ Resina,' 10 millilitres of the Tincture yield not less than 0·145 and not more than 0·155 gramme of Jalap Resin.

Dose.

Metric.
2 to 4 mls.

Imperial.
 $\frac{1}{2}$ to 1 fluid drachm.

TINCTURA JALAPÆ COMPOSITA

Compound Tincture of Jalap

Jalap, in No. 40 powder . . .	80 grammes
Scammony Resin, in No. 40 powder . . .	15 grammes
Turpeth, in No. 40 powder . . .	10 grammes
Alcohol (60 per cent.) sufficient to produce	1000 millilitres

Moisten the mixed powders with one hundred millilitres of the Alcohol, and complete the *percolation process*.

Dose.

Metric.
2 to 4 mls.

Imperial.
 $\frac{1}{2}$ to 1 fluid drachm.

TINCTURA KALADANÆ

Tincture of Kaladana

Kaladana, in No. 40 powder	200 grammes
Alcohol (70 per cent.) sufficient to produce	1000 millilitres

Moisten the powder with one hundred millilitres of the Alcohol, and complete the *percolation process*.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
2 to 4 mils.	$\frac{1}{2}$ to 1 fluid drachm.

TINCTURA KINO

Tincture of Kino

Kino, in powder	100 grammes
Glycerin	150 millilitres
Distilled Water	250 millilitres
Alcohol (90 per cent.) sufficient to produce	1000 millilitres

Mix the Glycerin and the Distilled Water; rub the Kino in a mortar with a sufficient quantity of the mixture to form a smooth paste, gradually adding the remainder of the mixture; transfer to a closed vessel; add five hundred millilitres of the Alcohol; set aside for twelve hours, shaking frequently; filter through a plug of cotton wool; pass sufficient of the Alcohol through the filter to produce the required volume.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
2 to 4 mils.	$\frac{1}{2}$ to 1 fluid drachm.

TINCTURA KRAMERIÆ**Tincture of Krameria***Synonym*—Tincture of Rhatany

Krameria Root, in No. 40 powder	200 grammes
Alcohol (60 per cent.) sufficient to produce	1000 millilitres

Moisten the powder with one hundred millilitres of the Alcohol, and complete the *percolation process*.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
2 to 4 mils.	$\frac{1}{2}$ to 1 fluid drachm.

TINCTURA LAVANDULÆ COMPOSITA**Compound Tincture of Lavender**

Oil of Lavender	5.0 millilitres
Oil of Rosemary	0.5 millilitre
Cinnamon Bark, bruised	10.0 grammes
Nutmeg, bruised	10.0 grammes
Red Sanders Wood	20.0 grammes
Alcohol (90 per cent.) sufficient to produce	1000.0 millilitres

Macerate the solid ingredients and the Oils with nine hundred millilitres of the Alcohol for seven days, shaking occasionally; filter; pass sufficient of the Alcohol through the filter to produce the required volume.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
2 to 4 mils.	$\frac{1}{2}$ to 1 fluid drachm.

TINCTURA LIMONIS

Tincture of Lemon

Fresh Lemon Peel, cut small . . . 250 grammes
Alcohol (90 per cent.) . . . 1000 millilitres

Prepare by the *maceration process*.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
2 to 4 mls.	$\frac{1}{2}$ to 1 fluid drachm.

See Appendix XII, page . . . , Limonis Cortex Siccatus.

TINCTURA LOBELIÆ ÆTHEREA

Ethereal Tincture of Lobelia

Lobelia, in No. 40 powder . . . 200 grammes
Spirit of Ether sufficient to pro-
duce 1000 millilitres

Moisten the powder with one hundred millilitres of Spirit of Ether, and complete the *percolation process*.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
3 to 10 decimils.	5 to 15 minims.

TINCTURA MYRRHÆ

Tincture of Myrrh

Myrrh, in coarse powder . . . 200 grammes
Alcohol (90 per cent.) sufficient
to produce 1000 millilitres

Macerate the Myrrh with eight hundred millilitres of the

Alcohol in a closed vessel for seven days, shaking frequently; filter; when the liquid ceases to drop, pass sufficient of the Alcohol through the filter to produce the required volume.

Dose.

Metric.
2 to 4 mils.

Imperial.
 $\frac{1}{2}$ to 1 fluid drachm.

TINCTURA NUCIS VOMICÆ

Tincture of Nux Vomica

Tincture of Nux Vomica contains in 100 millilitres 0.125 gramme of strychnine.

Liquid Extract of Nux Vomica	. 50 millilitres
Distilled Water	. 150 millilitres
Alcohol (90 per cent.) sufficient to produce	. 600 millilitres

Mix; filter if necessary.

Test.—Examined by the process described under 'Extractum Nucis Vomicæ Liquidum,' Tincture of Nux Vomica is found to contain in 100 millilitres 0.125 gramme of strychnine. *Limit of error* 0.005 gramme in excess or defect.

Dose.

Metric.
3 to 10 decimils.

Imperial.
5 to 15 minims.

Each millilitre of this Tincture contains 1.25 milligrams of strychnine, and each fluid drachm about $\frac{1}{16}$ grain. It contains approximately the same proportion of strychnine as the Tinctura Nucis Vomicæ of the International Agreement, and one-half of that contained in the corresponding preparation of the British Pharmacopœia, 1898.

*

TINCTURA OLIVERI CORTICIS**Tincture of Oliver's Bark**

Oliver's Bark, in No. 40 powder . . . 100 grammes
 Alcohol (60 per cent.) sufficient
 to produce 1000 millilitres

Moisten the powder with fifty millilitres of the Alcohol,
 and complete the *percolation process*.

Dose.

Metric
 2 to 4 mils.

Imperial.
 $\frac{1}{2}$ to 1 fluid drachm.

TINCTURA OPII**Tincture of Opium**

Synonym—Laudanum

Tincture of Opium contains in 100 millilitres 1 gramme
 of morphine calculated as anhydrous.

Opium 200 grammes
 Alcohol (90 per cent.) } of each a sufficient quantity
 Distilled Water }

Rub the Opium to a paste with five hundred millilitres
 of Distilled Water, previously heated to at least 90°;
 set aside for six hours; add five hundred millilitres of the
 Alcohol; mix thoroughly; set aside in a covered vessel for
 twenty-four hours; strain; press; mix the liquids; set
 aside for twenty-four hours; filter.

Determine the proportion of morphine in the strong
 tincture so prepared by the following process:—

Pour 40 millilitres of the liquid into a porcelain dish;
 evaporate on a water-bath until the volume is reduced to
 about 10 millilitres; mix the residual liquid in a mortar

with 1 gramme of freshly slaked *lime*; dilute the mixture with *water* to 41 millilitres; set aside for half an hour, stirring from time to time. Filter off 25 millilitres of the liquid (representing 25 millilitres of the strong tincture) through a plaited filter, having a diameter of about one decimetre, into a convenient vessel; add 2·5 millilitres of *alcohol* (90 per cent.) and 15 millilitres of *ether*; shake the mixture; add 1 gramme of *ammonium chloride*; shake well and frequently during half an hour; set aside for twelve hours for the morphine to separate. Counterbalance two small filters; place one within the other in a small funnel in such a way that the triple fold of the inner filter shall be superposed upon the single fold of the outer filter; wet them with *ether*; remove the ethereal layer of the liquid in the vessel as completely as possible by means of a small pipette, and transfer it to the filter; rinse the vessel with 8 millilitres of *ether*, again transferring the ethereal layer, by means of the pipette, to the filter; wash the filter with a total amount of 5 millilitres of *ether* added slowly, and in portions; let the filter dry in the air; pour upon it the liquid in the bottle, in portions, in such a way as to transfer the granular crystalline morphine as completely as possible to the filter. When all the liquid has passed through, wash the remainder of the morphine from the vessel with *morphinated water*. Wash the crystals with *morphinated water* until the washings are free from colour; allow the filter to drain and dry it, first at 60°, and finally at 115° for two hours. Weigh the crystals in the inner filter, counterbalancing by the outer filter. Take 0·2 gramme of the crystals, and titrate, with *N/10 solution of sulphuric acid*, as directed under 'Opium.' Add to the weight of anhydrous morphine obtained, as indicated by the titration, 0·025 gramme, a proportion representing the average loss of morphine during the process.

Having ascertained the proportion of morphine, calculated as anhydrous, present in 25 millilitres of the strong tincture, the remainder of the latter is to be diluted with sufficient of a mixture of *Alcohol* (90 per cent.) and *Distilled Water*, in equal volumes, to produce *Tincture of Opium* con-

taining 1 gramme of morphine, calculated as anhydrous, in 100 millilitres.

Test.—Examined by the foregoing process, Tincture of Opium is found to contain in 100 millilitres 1 gramme of morphine calculated as anhydrous. *Limit of error* 0·05 gramme in excess or defect.

Dose.

Metric.

Imperial.

3 to 10 decimils (repeated).	5 to 15 minims (repeated).
12 to 18 decimils (single).	20 to 30 minims (single).

This Tincture contains in 100 millilitres 1 gramme of morphine calculated as anhydrous; 110 minims contain 1 grain of the same. It is of approximately the same strength as the Tinctura Opii of the International Agreement, and is about one-fourth stronger than the corresponding preparation of the British Pharmacopœia, 1898.

Tincture of Opium may be prepared with any variety of opium containing a known percentage of morphine, calculated as anhydrous, provided that the percentage is not less than seven and a half, and provided that the resulting Tincture of Opium answers to the foregoing quantitative test.

TINCTURA OPII AMMONIATA

Ammoniated Tincture of Opium

Tincture of Opium	. . .	100 millilitres
Benzoic Acid	. . .	20 grammes
Oil of Anise	. . .	5 millilitres
Solution of Ammonia	. . .	200 millilitres
Alcohol (90 per cent.)	sufficient	
to produce	. . .	1000 millilitres

Dissolve the Oil of Anise and the Benzoic Acid in six hundred millilitres of the Alcohol; add the Tincture of Opium and the Solution of Ammonia; mix; filter; add sufficient of the Alcohol to produce the required volume.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
2 to 4 mils.	$\frac{1}{2}$ to 1 fluid drachm.

This Tincture contains in each millilitre 1 milligram (0·001 gramme) of morphine, calculated as anhydrous; and in each fluid drachm about one-eighteenth of a grain of the same. It contains approximately one-tenth less morphine than that contained in the corresponding preparation of the British Pharmacopœia, 1898.

TINCTURA PICRORHIZÆ**Tincture of Picrorhiza**

Picrorhiza, cut small and well

bruised	125 grammes
Alcohol (45 per cent.) ,	1000 millilitres

Prepare by the *maceration process*.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
2 to 4 mils.	$\frac{1}{2}$ to 1 fluid drachm.

TINCTURA PODOPHYLLI**Tincture of Podophyllum**

Podophyllum Resin	36·5 grammes
Alcohol (90 per cent.) sufficient to produce	1000·0 millilitres

Add the Podophyllum Resin to nine hundred millilitres of the Alcohol, and set aside for twenty-four hours, shaking occasionally; filter; pass sufficient of the Alcohol through the filter to produce the required volume.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
3 to 10 decimils.	5 to 15 minims.

TINCTURA PODOPHYLLI INDICI**Tincture of Indian Podophyllum***Synonym*—Tincture of Podophyllum Emodi

Indian Podophyllum Resin.	36·5 grammes
Alcohol (90 per cent.) sufficient to produce	1000·0 millilitres

Add the Indian Podophyllum Resin to nine hundred millilitres of the Alcohol, and set aside for twenty-four hours, shaking occasionally; filter; pass sufficient of the Alcohol through the filter to produce the required volume.

Dose.

Metric.
3 to 10 decimils.

Imperial.
5 to 15 minims.

TINCTURA PRUNI VIRGINIANÆ**Tincture of Wild Cherry***Synonym*—Tincture of Virginian Prune

Wild Cherry Bark, in No. 20 powder	200 grammes
Alcohol (90 per cent.)	565 millilitres
Distilled Water	365 millilitres
Glycerin	100 millilitres

Mix the powder with the Distilled Water; set aside in a closed vessel for twenty-four hours; add the Alcohol, and complete the *maceration process*; add the Glycerin to the product.

Dose.

Metric.
2 to 4 mils.

Imperial.
 $\frac{1}{2}$ to 1 fluid drachm.

188

AMERICAN UNITED

TRUST COMPANY OF NEW YORK

AND BRANCHES IN OTHER CITIES

NEW YORK, N. Y.

DECEMBER 31, 1900

ANNUAL REPORT

FOR THE YEAR ENDING

DECEMBER 31, 1900

AS APPROVED BY THE BOARD OF DIRECTORS

AND SUBMITTED TO THE STOCKHOLDERS

AT A SPECIAL MEETING HELD AT THE

TRUST COMPANY BUILDING, NEW YORK

ON JANUARY 10, 1901

BY THE BOARD OF DIRECTORS

AND THE STOCKHOLDERS

OF THE TRUST COMPANY OF NEW YORK

AND BRANCHES IN OTHER CITIES

NEW YORK, N. Y.

DECEMBER 31, 1900

ANNUAL REPORT

FOR THE YEAR ENDING

DECEMBER 31, 1900

AS APPROVED BY THE BOARD OF DIRECTORS

AND SUBMITTED TO THE STOCKHOLDERS

AT A SPECIAL MEETING HELD AT THE

TRUST COMPANY BUILDING, NEW YORK

ON JANUARY 10, 1901

BY THE BOARD OF DIRECTORS

AND THE STOCKHOLDERS

OF THE TRUST COMPANY OF NEW YORK

AND BRANCHES IN OTHER CITIES

NEW YORK, N. Y.

DECEMBER 31, 1900

ANNUAL REPORT

FOR THE YEAR ENDING

TINCTURA PYRETHRI

Tincture of Pyrethrum

Pyrethrum Root, in No. 40 powder 200 grammes.
 Alcohol (70 per cent.) sufficient
 to produce 1000 millilitres.

Moisten the powder with one hundred and fifty millilitres of the Alcohol, and complete the *percolation process*.

TINCTURA QUASSIÆ

Tincture of Quassia

Quassia Wood, rasped 100 grammes
 Alcohol (45 per cent.) 1000 millilitres

Prepare by the *maceration process*.

Dose.

Metric.
 2 to 4 mils.

Imperial.
 $\frac{1}{2}$ to 1 fluid drachm.

TINCTURA QUILLAIAE

Tincture of Quillaia

Quillaia Bark, in No. 20 powder . . . 50 grammes
 Alcohol (60 per cent.) sufficient
 to produce 1000 millilitres

Moisten the powder with twenty-five millilitres of the Alcohol, and complete the *percolation process*.

Dose.

Metric.
 2 to 4 mils.

Imperial.
 $\frac{1}{2}$ to 1 fluid drachm.

TINCTURA QUININÆ**Tincture of Quinine**

Quinine Hydrochloride . . .	20 grammes
Tincture of Orange . . .	1000 millilitres

Dissolve.

Dose.

Metric.
2 to 4 mils.

Imperial.
 $\frac{1}{2}$ to 1 fluid drachm.

TINCTURA QUININÆ AMMONIATA**Ammoniated Tincture of Quinine**

Quinine Sulphate	20 grammes
Solution of Ammonia . . .	100 millilitres
Alcohol (60 per cent.) . . .	900 millilitres

Mix the Solution of Ammonia with the Alcohol; add the Quinine Sulphate; shake until a clear solution is produced; set aside for three days; filter.

Dose.

Metric.
2 to 4 mils.

Imperial.
 $\frac{1}{2}$ to 1 fluid drachm.

TINCTURA RHEI COMPOSITA**Compound Tincture of Rhubarb**

Rhubarb, in No. 20 powder. . .	100·0 grammes
Cardamom Seeds, bruised . . .	12·5 grammes
Coriander Fruit, bruised . . .	12·5 grammes
Glycerin	100·0 millilitres
Alcohol (45 per cent.) sufficient to produce	1000·0 millilitres.

Moisten the solid ingredients with one hundred millilitres of the Alcohol, and prepare, by the *percolation process*, eight hundred and fifty millilitres of tincture. Add the Glycerin, and sufficient of the Alcohol to produce the required volume.

Dose.

*Metric.**Imperial.*

2 to 4 mls (repeated).	$\frac{1}{2}$ to 1 fluid drachm (repeated).
8 to 16 mls (single).	2 to 4 fluid drachms (single).

TINCTURA SCILLÆ

Tincture of Squill

Squill, bruised	200 grammes
Alcohol (60 per cent.)	1000 millilitres

Prepare by the *maceration process*.

Dose.

*Metric.**Imperial.*

3 to 10 decimils.	5 to 15 minims.
-------------------	-----------------

TINCTURA SENEGÆ

Tincture of Senega

Senega Root, in No. 40 powder . .	200 grammes
Alcohol (60 per cent.) sufficient	
to produce	1000 millilitres

Moisten the powder with two hundred millilitres of the Alcohol, and complete the *percolation process*.

Dose.

*Metric.**Imperial.*

2 to 4 mls.	$\frac{1}{2}$ to 1 fluid drachm.
-------------	----------------------------------

TINCTURA SENNÆ COMPOSITA

Compound Tincture of Senna

Senna Leaves, broken small . . .	200 grammes
Caraway Fruit, bruised . . .	25 grammes
Coriander Fruit, bruised . . .	25 grammes
Glycerin	100 millilitres
Alcohol (45 per cent.) sufficient to produce	1000 millilitres

Moisten the solid ingredients with two hundred and fifty millilitres of the Alcohol, and prepare, by the *percolation process*, eight hundred and fifty millilitres of tincture. Add the Glycerin and sufficient of the Alcohol to produce the required volume.

Dose.

Metric.

Imperial.

2 to 4 mls (repeated).	$\frac{1}{2}$ to 1 fluid drachm (repeated).
8 to 16 mls (single).	2 to 4 fluid drachms (single).

TINCTURA SERPENTARIÆ

Tincture of Serpentry

Serpentary Rhizome, in No. 40 powder	200 grammes
Alcohol (60 per cent.) sufficient to produce	1000 millilitres

Moisten the powder with two hundred millilitres of the Alcohol, and complete the *percolation process*.

Dose.

Metric.

Imperial.

2 to 4 mls.	$\frac{1}{2}$ to 1 fluid drachm.
-------------	----------------------------------

TINCTURA STRAMONII**Tincture of Stramonium**

Stramonium Leaves, in No. 20

powder	200 grammes
Alcohol (45 per cent.) sufficient	
to produce	1000 millilitres

Moisten the powder with two hundred millilitres of the Alcohol, and complete the *percolation process*.

*Dose.**Metric.*

3 to 10 decimils.

Imperial.

5 to 15 minims.

TINCTURA STROPHANTHI**Tincture of Strophanthus**

Strophanthus Seeds, in No. 30

powder, dried at 45°	100 grammes
Ether	a sufficient quantity
Alcohol (70 per cent.) sufficient to	
produce	1000 millilitres

Pack the powder in a percolator ; moisten with the Ether, and macerate for twenty-four hours ; then allow percolation to proceed, continuing the addition of the Ether until the liquid passes through colourless. Remove the marc from the percolator, and dry it, gradually heating it to 50°. Again reduce it to powder, repack in the percolator, and moisten with the Alcohol. Macerate for forty-eight hours, then pour on successive quantities of the Alcohol, percolating slowly, until five hundred millilitres of percolate are obtained ; add sufficient of the Alcohol to produce the required volume.

*Dose.**Metric.*

12 to 50 centimils.

Imperial.

2 to 5 minims.

This Tincture is made with four times the proportion of Strophanthus Seeds ordered for the corresponding preparation in the British Pharmacopœia, 1898. It is of approximately the same strength as the Tinctura Strophanthi of the International Agreement.

TINCTURA TOLUTANA

Tincture of Balsam of Tolu

Balsam of Tolu 100 grammes

Alcohol (90 per cent.) sufficient

to produce 1000 millilitres

Dissolve the Balsam of Tolu in eight hundred millilitres of the Alcohol; filter; pass sufficient of the Alcohol through the filter to produce the required volume.

*Dose.**Metric.*

2 to 4 mils.

Imperial. $\frac{1}{2}$ to 1 fluid drachm.

TINCTURA URGINEÆ

Tincture of Urginea

Urginea, bruised 200 grammes

Alcohol (60 per cent.) 1000 millilitres

Prepare by the *maceration process*.

*Dose.**Metric.*

3 to 10 decimils.

Imperial.

5 to 15 minims.

TINCTURA VALERIANÆ AMMONIATA**Ammoniated Tincture of Valerian**

Valerian Rhizome, in No. 40

powder	200 grammes
Oil of Nutmeg	3 millilitres
Oil of Lemon	2 millilitres
Solution of Ammonia	100 millilitres
Alcohol (60 per cent.)	900 millilitres

Mix the liquid ingredients, and prepare by the *maceration process*.

Dose.

Metric.
2 to 4 mils.

Imperial.
 $\frac{1}{2}$ to 1 fluid drachm.

**TINCTURA VALERIANÆ INDICÆ
AMMONIATA****Ammoniated Tincture of Indian Valerian**

Indian Valerian, in No. 40

powder	200 grammes
Oil of Nutmeg	3 millilitres
Oil of Lemon	2 millilitres
Solution of Ammonia	100 millilitres
Alcohol (90 per cent.)	900 millilitres

Mix the liquid ingredients, and prepare by the *maceration process*.

Dose.

Metric.
2 to 4 mils.

Imperial.
 $\frac{1}{2}$ to 1 fluid drachm.

TINCTURA ZINGIBERIS

Tincture of Ginger

Ginger, in No. 40 powder . . . 100 grammes
 Alcohol (90 per cent.) sufficient
 to produce 1000 millilitres

Moisten the powder with one hundred millilitres of the Alcohol, and complete the *percolation process*.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
2 to 4 mils.	$\frac{1}{2}$ to 1 fluid drachm.

TRAGACANTHA

Tragacanth

Tragacanth is a gummy exudation obtained by incision from *Astragalus gummifer*, *Labill.*, and some other species of *Astragalus*, *Linn.* Known in commerce as Syrian tragacanth.

Characters and Tests.—Thin flattened flakes, irregularly oblong, or more or less curved, marked on the surface by concentric ridges. Frequently two and a half centimetres long, and twelve millimetres wide. White or pale yellowish-white, somewhat translucent. Horny, fracture short. Inodorous; almost tasteless. Sparingly soluble in *water*, but swelling into a gelatinous mass, which may be tinged violet or blue by *N/10 solution of iodine*. Ash not more than 4 per cent.

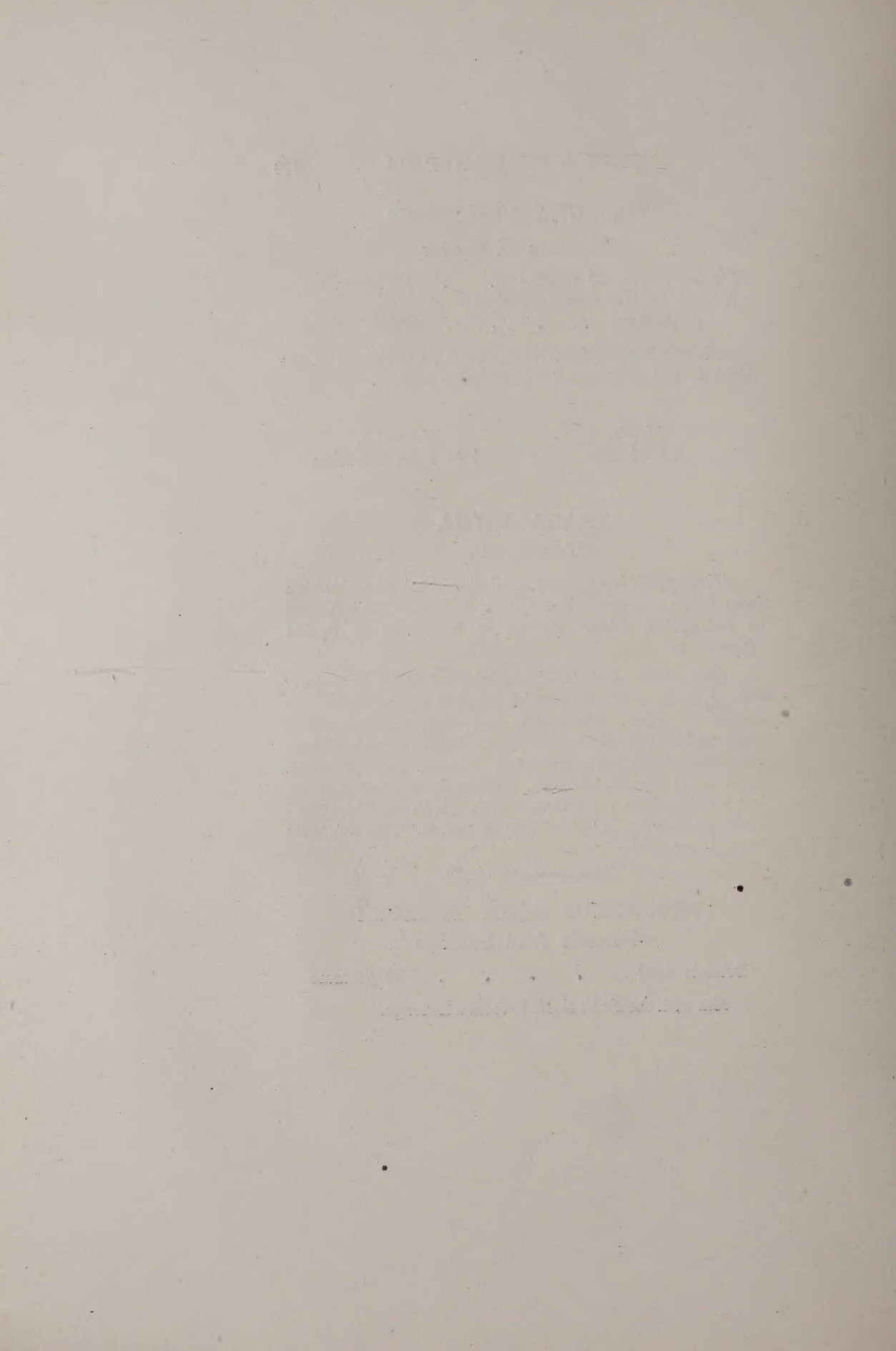
Triental. p. 244

TROCHISCUS ACIDI BENZOICI

Benzoic Acid Lozenge

Benzoic Acid 0.03 gramme

Mix with the *Fruit Basis* to form a Lozenge.



TROCHISCUS ACIDI CARBOLICI

Phenol Lozenge

Phenol, in powder	15 grammes
Refined Sugar, in powder	500 grammes
Gum Acacia, in powder	45 grammes
Tragacanth, in powder	15 grammes
Lemon Juice	45 millilitres

Mix. Divide into five hundred lozenges. Dry them in a hot-air chamber at a moderate temperature.

Each Lozenge contains 0·03 gramme of Phenol, or approximately $\frac{1}{4}$ grain.



TROCHISCUS ACIDI TANNICI

Tannic Acid Lozenge

Tannic Acid 0·03 gramme

Mix with the *Tolu Basis* to form a Lozenge.

TROCHISCUS BISMUTHI COMPOSITUS

Compound Bismuth Lozenge

Bismuth Oxycarbonate	0·15 gramme
Heavy Magnesium Carbonate	0·15 gramme
Precipitated Calcium Carbonate	0·30 gramme

Mix with the *Rose Basis* to form a Lozenge.

TROCHISCUS CATECHU

Catechu Lozenge

Catechu 0·06 gramme

Mix with the *Fruit Basis* to form a Lozenge.

TROCHISCUS FERRI REDACTI**Reduced Iron Lozenge**

Reduced Iron 0·06 gramme

Mix with the *Simple Basis* to form a Lozenge.

TROCHISCUS GUAIIACI RESINÆ**Guaiaacum Resin Lozenge**

Guaiaacum Resin 0·2 gramme

Mix with the *Fruit Basis* to form a Lozenge.

TROCHISCUS IPECACUANHÆ**Ipecacuanha Lozenge**

Ipecacuanha Root, in powder . . 0·015 gramme

Mix with the *Simple Basis* to form a Lozenge.

TROCHISCUS KINO EUCALYPTI**Eucalyptus Kino Lozenge**

Synonyms—Red Gum Lozenge: Eucalyptus Gum Lozenge

Eucalyptus Kino 0·06 gramme

Mix with the *Fruit Basis* to form a Lozenge.

TROCHISCUS KRAMERIÆ**Krameria Lozenge***Synonym*—Rhatany Lozenge

Extract of Krameria . . . 0·06 gramme

Mix with the *Fruit Basis* to form a Lozenge.**TROCHISCUS KRAMERIÆ ET COCAINÆ****Krameria and Cocaine Lozenge***Synonym*—Rhatany and Cocaine Lozenge

Extract of Krameria . . . 0·060 gramme

Cocaine Hydrochloride . . . 0·003 gramme

Mix with the *Fruit Basis* to form a Lozenge.**TROCHISCUS MORPHINÆ****Morphine Lozenge**

Morphine Hydrochloride . . . 0·002 gramme

Mix with the *Tolu Basis* to form a Lozenge.**TROCHISCUS MORPHINÆ ET IPECACUANHÆ****Morphine and Ipecacuanha Lozenge**

Morphine Hydrochloride . . . 0·002 gramme

Ipecacuanha Root, in powder . . 0·006 gramme

Mix with the *Tolu Basis* to form a Lozenge.

TROCHISCUS POTASSII CHLORATIS**Potassium Chlorate Lozenge**

Potassium Chlorate 0·2 gramme

Mix with the *Rose Basis* to form a Lozenge.

TROCHISCUS SANTONINI**Santonin Lozenge**

Santonin 0·06 gramme

Mix with the *Simple Basis* to form a Lozenge.

TROCHISCUS SULPHURIS**Sulphur Lozenge**

Precipitated Sulphur 150 grammes

Acid Potassium Tartrate, in
powder 30 grammes

Refined Sugar, in powder 275 grammes

Gum Acacia, in powder 30 grammes

Tincture of Orange 30 millilitres

Mucilage of Gum Acacia 30 millilitres

Mix the Tincture of Orange with the powders ; add the Mucilage of Gum Acacia to form a suitable mass. Divide into five hundred Lozenges. Dry them in a hot-air chamber at a moderate temperature.

Each Lozenge contains approximately 0·3 gramme of Precipitated Sulphur, or approximately 5 grains.

TURPETHUM**Turpeth**

Turpeth is the dried root and stem of *Ipomœa Turpethum*, *R.Br.*

Characters.—In cylindrical pieces of varying length, from one to five centimetres wide, often split on one side and deprived of the central portion; longitudinally furrowed; dull grey or brown. Fracture of the bark short, of the wood fibrous; internally usually pale grey. In transverse section, a porous wood surrounded by a thick bark in which abnormal wood bundles are frequently present. Slight odour; taste nauseous, slowly developed.

*Dose.**Metric.*

3 to 12 decigrams.

Imperial.

5 to 20 grains.

UNGUENTUM ACIDI BORICI**Boric Acid Ointment**

Boric Acid, in powder	10 grammes
Paraffin Ointment, white,	90 grammes

Melt the Paraffin Ointment; sift in the Boric Acid; stir until cold.

UNGUENTUM ACIDI CARBOLICI**Phenol Ointment**

Phenol	3 grammes
Paraffin Ointment, white	97 grammes

Melt the Paraffin Ointment; in it dissolve the Phenol; stir until cold.

3% *

UNGUENTUM ACIDI SALICYLICI**Salicylic Acid Ointment**

Salicylic Acid, in powder	2 grammes
Paraffin Ointment, white	98 grammes

2%

Melt the Paraffin Ointment ; sift in the Salicylic Acid ; stir until cold.

UNGUENTUM ACONITINÆ**Aconitine Ointment**

Aconitine.	2 grammes
Oleic Acid	16 grammes
Prepared Lard	82 grammes

2%

Triturate the Aconitine with the Oleic Acid, and gently warm the mixture until dissolved ; add the Prepared Lard ; mix.

See Appendix XII, page , Unguenta. In India, Prepared Suet (Sevum Præparatum) should be employed in making this Ointment instead of Prepared Lard.

UNGUENTUM AQUÆ ROSÆ**Rose-Water Ointment**

Rose Water	20.0 millilitres
White Beeswax	18.0 grammes
Borax	1.0 gramme
Almond Oil	61.0 grammes
Oil of Rose	0.1 millilitre

Melt the White Beeswax in the Almond Oil ; add, with constant stirring, the Borax previously dissolved in the

Rose Water; add the Oil of Rose, and continue to stir until cold.

See Appendix XII, page , Unguenta.

UNGUENTUM ATROPINÆ

Atropine Ointment

Atropine	2 grammes
Oleic Acid	8 grammes
Prepared Lard	90 grammes

Triturate the Atropine with the Oleic Acid, and gently warm the mixture until dissolved; add the Prepared Lard; mix.

See Appendix XII, page , Unguenta. In India, Prepared Suet (Sevum Præparatum) should be employed in making this Ointment instead of Prepared Lard.

UNGUENTUM BELLADONNÆ

Belladonna Ointment

Liquid Extract of Belladonna	80 millilitres
Benzoated Lard	60 grammes
Wool Fat	20 grammes

Evaporate the Liquid Extract of Belladonna on a water-bath until it is reduced to twenty grammes; mix with the Benzoated Lard and Wool Fat.

100 parts of this Ointment contain 0·6 part of the alkaloids of Belladonna Root.

See Appendix XII, page , Unguenta. In India, Benzoated Suet (Sevum Benzoatum) should be employed in making this Ointment instead of Benzoated Lard.

UNGUENTUM CANTHARIDINI**Cantharidin Ointment**

Cantharidin.	0.1 gramme
Chloroform	10.0 millilitres
Benzoated Lard	290.0 grammes

Dissolve the Cantharidin in the Chloroform; add the solution to the Benzoated Lard, previously melted; stir until cold.

This Ointment contains 0.033 per cent. of Cantharidin, and is approximately two-thirds of the strength of the Unguentum Cantharidis of the British Pharmacopœia, 1898.

See Appendix XII, page , Unguenta. In India, Benzoated Suet (Sevum Benzoatum) should be employed in making this Ointment instead of Benzoated Lard.

UNGUENTUM CAPSICI**Capsicum Ointment**

Capsicum Fruit, bruised	25 grammes
Hard Paraffin	10 grammes
Soft Paraffin	75 grammes
Prepared Lard	10 grammes

Digest on a water-bath for one hour, stirring occasionally; strain; stir until cold.

See Appendix XII, page , Unguenta. In India, Prepared Suet (Sevum Præparatum) should be employed in making this Ointment instead of Prepared Lard.

UNGUENTUM CETACEI**Spermaceti Ointment**

Spermaceti	20 grammes
White Beeswax	8 grammes
Liquid Paraffin	72 grammes

Melt together, and stir until cold.

See Appendix XII, page , Unguenta.

UNGUENTUM CHAULMOOGRÆ**Chaulmoogra Ointment***Synonym*—Gynocardia Ointment

Chaulmoogra Oil	10 grammes
Hard Paraffin	40 grammes
Soft Paraffin, white	50 grammes

Melt the Hard and Soft Paraffins together; add the Chaulmoogra Oil; stir until cold.

UNGUENTUM CHRYSAROBINI**Chrysarobin Ointment**

Chrysarobin, in powder	4 grammes
Soft Paraffin	96 grammes

4%

Triturate the Chrysarobin with a portion of the Soft Paraffin until smooth; gradually add the remainder, mixing thoroughly by trituration.

UNGUENTUM COCAINÆ**Cocaine Ointment**

Cocaine	4 grammes
Oleic Acid	16 grammes
Prepared Lard	80 grammes

4%

Triturate the Cocaine with the Oleic Acid, and gently warm the mixture until dissolved; add the Prepared Lard; mix.

See Appendix XII, page , Unguenta. In India, Prepared Suet (*Sevum Præparatum*) should be employed in making this Ointment instead of Prepared Lard.

THE UNIVERSITY OF CHICAGO

DEPARTMENT OF CHEMISTRY

RESEARCH REPORT

NO. 1000

BY

DR. J. H. DILLON

AND

DR. R. M. M. M.

RESEARCH REPORT

NO. 1000

BY

DR. J. H. DILLON

AND

DR. R. M. M. M.

RESEARCH REPORT

NO. 1000

BY

DR. J. H. DILLON

AND

DR. R. M. M. M.

RESEARCH REPORT

NO. 1000

BY

DR. J. H. DILLON

AND

DR. R. M. M. M.

UNGUENTUM CREOSOTI**Creosote Ointment**

Creosote	10 grammes
Hard Paraffin	40 grammes
Soft Paraffin, white	50 grammes

10%

Melt the Hard and Soft Paraffins together ; add the Creosote ; stir until cold.

UNGUENTUM EUCALYPTI**Eucalyptus Ointment**

Oil of Eucalyptus	10 grammes
Hard Paraffin	40 grammes
Soft Paraffin, white	50 grammes

10%

Melt the Hard and Soft Paraffins together ; add the Oil of Eucalyptus ; stir until cold.

UNGUENTUM GALLÆ**Gall Ointment**

Galls, in powder	20 grammes
Benzoated Lard	80 grammes

Triturate the Galls with a portion of the Benzoated Lard until smooth ; gradually add the remainder, mixing thoroughly by trituration.

See Appendix XII, page , Unguenta. In India, Benzoated Suet (Sevum Benzoatum) should be employed in making this Ointment instead of Benzoated Lard.

UNGUENTUM GALLÆ CUM OPIO**Gall and Opium Ointment**

Gall Ointment	92·5 grammes
Opium, in powder	7·5 grammes

Triturate the Opium with a portion of the Gall Ointment until smooth; gradually add the remainder, mixing thoroughly by trituration.

100 parts of this Ointment contain 7·5 parts of Opium.

UNGUENTUM HAMAMELIDIS**Hamamelis Ointment**

Liquid Extract of Hamamelis	10 millilitres
Wool Fat	60 grammes
Soft Paraffin	30 grammes

Mix by trituration in a warm mortar.

UNGUENTUM HYDRARGYRI**Mercury Ointment**

Mercury	30 grammes
Benzoated Lard	65 grammes
Prepared Suet	5 grammes

Triturate until metallic globules cease to be visible.

This Ointment is approximately three-fifths of the strength of the corresponding preparation of the British Pharmacopœia, 1898; it is of the same strength as the Unguentum Hydrargyri of the International Agreement.

See Appendix XII, page , Unguenta. In India, Benzoated Suet (Sevum Benzoatum) should be employed in making this Ointment instead of Benzoated Lard.



UNGUENTUM HYDRARGYRI AMMONIATI

Ammoniated Mercury Ointment

Synonym—White Precipitate Ointment

Ammoniated Mercury, in powder	5 grammes
Benzoated Lard	95 grammes

Triturate the Ammoniated Mercury with a portion of the Benzoated Lard until smooth; gradually add the remainder, mixing thoroughly by trituration.

This Ointment is approximately one-half of the strength of the corresponding preparation of the British Pharmacopœia, 1898.

See Appendix XII, page , Unguenta and Oleum Olivæ. In India, Benzoated Suet (Sevum Benzoatum) should be employed in making this Ointment instead of Benzoated Lard.

*

UNGUENTUM HYDRARGYRI COMPOSITUM

Compound Mercury Ointment

Mercury Ointment	40 grammes
Yellow Beeswax	24 grammes
Olive Oil	24 grammes
Camphor, in flowers	12 grammes

Mix the Yellow Beeswax, Olive Oil, and Mercury Ointment with the aid of heat; add the Camphor; triturate until cold.

This Ointment is approximately three-fifths of the strength of the corresponding preparation of the British Pharmacopœia, 1898.

See Appendix XII, page , Unguenta.

UNGUENTUM HYDRARGYRI IODIDI RUBRI**Red Mercuric Iodide Ointment***Synonym*—Ointment of Red Iodide of Mercury

Red Mercuric Iodide, in powder	. 4 grammes
Benzoated Lard	 96 grammes

Triturate the Red Mercuric Iodide with a portion of the Benzoated Lard until smooth; gradually add the remainder, mixing thoroughly by trituration.

See Appendix XII, page , Unguenta. In India, Benzoated Suet (Sevum Benzoatum) should be employed in making this Ointment instead of Benzoated Lard.

UNGUENTUM HYDRARGYRI NITRATIS**Mercuric Nitrate Ointment***Synonym*—Ointment of Nitrate of Mercury

Mercury	 10 grammes
Nitric Acid	 30 millilitres
Prepared Lard	 40 grammes
Olive Oil	 70 grammes

Dissolve the Mercury in the Nitric Acid without the aid of heat, shaking gently from time to time. Heat the Prepared Lard and Olive Oil together on a sand-bath, so that the mixture when transferred to a heated earthen jar, capable of holding ten times the quantity, is at a temperature of about 149°. Add the cold mercurial solution very gradually, stirring constantly to promote the disengagement of fumes. Keep the mixture at a temperature of not less than 90° until frothing ceases, then stir with a glass or wooden spatula until cold.

See Appendix XII, page , Unguenta and Oleum Olivæ. In India, Prepared Suet (Sevum Preparatum) should be employed in making this Ointment instead of Prepared Lard.

**UNGUENTUM HYDRARGYRI NITRATIS
DILUTUM****Diluted Mercuric Nitrate Ointment**

Synonym—Diluted Ointment of Nitrate of Mercury

Mercuric Nitrate Ointment	. . .	20 grammes
Soft Paraffin, yellow	. . .	80 grammes

Mix by trituration.

UNGUENTUM HYDRARGYRI OLEATIS**Mercuric Oleate Ointment**

Oleated Mercury		25 grammes
Benzoated Lard		75 grammes

Mix by trituration.

See Appendix XII, page , Unguenta. In India, Benzoated Suet (Sevum Benzoatum) should be employed in making this Ointment instead of Benzoated Lard.

UNGUENTUM HYDRARGYRI OXIDI FLAVI**Yellow Mercuric Oxide Ointment**

Yellow Mercuric Oxide, in powder	. . .	2 grammes
Soft Paraffin, yellow	. . .	98 grammes

Triturate the Yellow Mercuric Oxide with a portion of the Soft Paraffin until smooth ; gradually add the remainder, mixing thoroughly by trituration.

2%

UNGUENTUM HYDRARGYRI OXIDI RUBRI**Red Mercuric Oxide Ointment***Synonym*—Red Precipitate Ointment

Red Mercuric Oxide, in powder	. 10 grammes	10%
Paraffin Ointment, yellow	. 90 grammes	

Melt the Paraffin Ointment ; sift in the Red Mercuric Oxide ; stir until cold.

UNGUENTUM HYDRARGYRI SUBCHLORIDI**Mercurous Chloride Ointment***Synonym*—Calomel Ointment

Mercurous Chloride	20 grammes	20%
Benzoated Lard	80 grammes	

Triturate the Mercurous Chloride with a portion of the Benzoated Lard until smooth ; gradually add the remainder, mixing thoroughly by trituration.

This Ointment is twice the strength of the corresponding preparation of the British Pharmacopœia of 1898.

See Appendix XII, page , Unguenta. In India, Benzoated Suet (Sevum Benzoatum) should be employed in making this Ointment instead of Benzoated Lard.

UNGUENTUM IODI**Iodine Ointment**

Iodine	4 grammes
Potassium Iodide	4 grammes
Glycerin	12 grammes
Prepared Lard	80 grammes

Triturate the Iodine, Potassium Iodide, and Glycerin in a glass or porcelain mortar; add the Prepared Lard; mix thoroughly by trituration.

See Appendix XII, page , Unguenta. In India Prepared Suet (Sevum Præparatum) should be employed in making this Ointment instead of Prepared Lard.

UNGUENTUM IODOFORMI

Iodoform Ointment

Iodoform, in very fine powder . . .	10 grammes
Prepared Lard . . .	90 grammes

10%

Triturate the Iodoform with a portion of the Prepared Lard until smooth; gradually add the remainder, mixing thoroughly by trituration.

See Appendix XII, page , Unguenta. In India, Prepared Suet (Sevum Præparatum) should be employed in making this Ointment instead of Prepared Lard.

UNGUENTUM LANÆ COMPOSITUM

Compound Wool Fat Ointment

Synonym—Emollient Ointment

Prepared Lard . . .	40 grammes
Wool Fat . . .	40 grammes
Paraffin Ointment . . .	20 grammes

Melt together; stir until cold.

See Appendix XII, page , Unguenta. In India, Prepared Suet (Sevum Præparatum) should be employed in making this Ointment instead of Prepared Lard.

UNGUENTUM MYROBALANI**Myrobalan Ointment**

Myrobalans, in powder	20 grammes
Benzoated Lard	80 grammes

Triturate the Myrobalans with a portion of the Benzoated Lard until smooth; gradually add the remainder, mixing thoroughly by trituration.

See Appendix XII, page , Unguenta. In India, Benzoated Suet (Sevum Benzoatum) should be employed in making this Ointment instead of Benzoated Lard.

UNGUENTUM MYROBALANI CUM OPIO**Myrobalan and Opium Ointment**

Myrobalan Ointment	92·5 grammes
Opium, in powder	7·5 grammes

Triturate the Opium with a portion of the Myrobalan Ointment until smooth; gradually add the remainder, mixing thoroughly by trituration.

This Ointment contains 7·5 per cent. of Opium.

UNGUENTUM PARAFFINI**Paraffin Ointment**

Hard Paraffin	27 grammes
Soft Paraffin	70 grammes
White Beeswax	3 grammes

Melt together; stir until cold.

When Paraffin Ointment is used as the basis of white ointments it should be prepared with the white variety of Soft Paraffin; and when used in coloured ointments it should be prepared with the yellow variety of Soft Paraffin.

See Appendix XII, page , Unguenta.

UNGUENTUM PICIS LIQUIDÆ**Tar Ointment**

Tar	70 grammes
Prepared Lard	5 grammes
Yellow Beeswax	25 grammes

Melt together ; stir until cold.

See Appendix XII, page . . . , Unguenta. In India, Prepared Suet (*Sevum Præparatum*) should be employed in making this Ointment instead of Prepared Lard.

UNGUENTUM PLUMBI IODIDI**Lead Iodide Ointment**

Lead Iodide, in powder	10 grammes
Benzoated Lard	90 grammes

Triturate the Lead Iodide with a portion of the Benzoated Lard until smooth ; gradually add the remainder, mixing thoroughly by trituration.

See Appendix XII, page . . . , Unguenta. In India, Benzoated Suet (*Sevum Benzoatum*) should be employed in making this Ointment instead of Benzoated Lard.

UNGUENTUM PLUMBI SUBACETATIS**Lead Subacetate Ointment**

Strong Solution of Lead Subacetate	12·5 grammes
Wool Fat	25·0 grammes
Hard Paraffin	12·5 grammes
Soft Paraffin	50·0 grammes

Melt together the Wool Fat and the Hard and Soft Paraffins ; stir until nearly cold ; add the Strong Solution of Lead Subacetate and continue to stir until cold.

THE UNIVERSITY OF CHICAGO

DEPARTMENT OF CHEMISTRY

1911-1912

THE UNIVERSITY OF CHICAGO
DEPARTMENT OF CHEMISTRY
1911-1912
The following is a list of the
members of the Department of
Chemistry for the year 1911-1912.
The names are arranged in
alphabetical order of the
last name.

ASSOCIATE PROFESSORS

James S. Edwards

1911-1912

THE UNIVERSITY OF CHICAGO
DEPARTMENT OF CHEMISTRY
1911-1912
The following is a list of the
members of the Department of
Chemistry for the year 1911-1912.
The names are arranged in
alphabetical order of the
last name.

ASSOCIATE PROFESSORS

James S. Edwards

1911-1912

THE UNIVERSITY OF CHICAGO
DEPARTMENT OF CHEMISTRY
1911-1912
The following is a list of the
members of the Department of
Chemistry for the year 1911-1912.
The names are arranged in
alphabetical order of the
last name.

UNGUENTUM POTASSII IODIDI**Potassium Iodide Ointment**

Potassium Iodide	10·0 grammes
Potassium Carbonate	0·6 gramme
Distilled Water	9·4 grammes
Benzoated Lard	80·0 grammes

Dissolve the Potassium Iodide and Potassium Carbonate in the Distilled Water ; mix the solution, gradually, with the Benzoated Lard, in a slightly warmed mortar.

See Appendix XII, page , Unguenta. In India, Benzoated Suet [(Sevum Benzoatum)] should be employed in making this Ointment instead of Benzoated Lard.

UNGUENTUM RESINÆ**Resin Ointment**

Resin, in powder	26 grammes
Yellow Beeswax	26 grammes
Olive Oil	26 grammes
Prepared Lard	22 grammes

Melt together ; strain ; stir until cold.

See Appendix XII, page , Unguenta and Oleum Olivæ. In India, Prepared Suet (Sevum Præparatum) should be employed in making this Ointment instead of Prepared Lard.

UNGUENTUM STAPHISAGRIÆ**Stavesacre Ointment**

Stavesacre Seeds	20 grammes
Yellow Beeswax	10 grammes
Benzoated Lard	85 grammes

Crush the Stavesacre Seeds ; digest the crushed seeds with the Benzoated Lard on a water-bath for two hours ; strain and press through calico ; melt the Beeswax in the liquid ; stir until cold.

See Appendix XII, page , Unguenta. In India, Benzoated Suet (Sevum Benzoatum) should be employed in making this Ointment instead of Benzoated Lard.

UNGUENTUM SULPHURIS

Sulphur Ointment

Sublimed Sulphur, finely sifted	10 grammes
Benzoated Lard	90 grammes

Triturate the Sublimed Sulphur with a portion of the Benzoated Lard until smooth ; gradually add the remainder, mixing thoroughly by trituration.

See Appendix XII, page , Unguenta. In India, Benzoated Suet (Sevum Benzoatum) should be employed in making this Ointment instead of Benzoated Lard.

UNGUENTUM ZINCI

Zinc Ointment

Zinc Oxide, finely sifted	15 grammes
Benzoated Lard	85 grammes

Mix by trituration.

See Appendix XII, page , Unguenta. In India, Benzoated Suet (Sevum Benzoatum) should be employed in making this Ointment instead of Benzoated Lard.

UNGUENTUM ZINCI OLEATIS

Zinc Oleate Ointment

Zinc Sulphate		30 grammes
Hard Soap, in shavings		90 grammes
Distilled Water, boiling	{ of each a sufficient quantity	
Soft Paraffin, white		

Dissolve the Zinc Sulphate in sixty millilitres of the Distilled Water. Dissolve the Hard Soap in six hundred millilitres of the Distilled Water. Mix the solutions; heat to boiling; allow the melted zinc oleate to rise to the surface; cool until it solidifies; pour off the aqueous liquid; boil the zinc oleate with successive quantities of Distilled Water until the washings afford not more than a slight *reaction* for sulphates; reduce the cake thus obtained to a coarse powder; dry at a temperature below 60°; melt on a water-bath with an equal weight of the Soft Paraffin; stir until cold.

URGINEA

Urginea

Synonym—Indian Squill

Urginea consists of the younger bulbs of *Urginea indica*, *Kunth*, collected soon after the plants have flowered, divested of their dry, outer, membranous coats, cut into slices, and dried.

Characters.—Curved or sickle-shaped strips, separated or connected, several together, to a portion of the shortened axis; usually one to five centimetres long and five to ten millimetres wide; yellowish-white, fleshy, often longitudinally ribbed; tough when slightly moist, but brittle and pulverisable when dry. No odour; taste bitter and acrid.

*Dose.**Metric.*

6 to 20 centigrams.

Imperial.

1 to 3 grains.

*Urotropin, p-171***UVÆ URSI FOLIA****Bearberry Leaves**

Bearberry Leaves are the dried leaves of *Arctostaphylos Uva-ursi*, *Spreng.*

Characters.—Obovate or spatulate, about two centimetres long, yellowish-green, coriaceous, entire, shortly petiolate. Upper surface glabrous, shining, reticulate; veinlets depressed. Slight odour; taste very astringent.

VALERIANÆ INDICÆ RHIZOMA**Indian Valerian Rhizome**

Indian Valerian Rhizome is the dried rhizome and rootlets of *Valeriana Wallichii*, *DC.*

Characters.—Rhizome curved, about five centimetres long, from five to ten millimetres thick, dull brown, with raised transverse leaf-scars, numerous prominent root-scars and a few thick roots; the crown bearing the remains of petioles. Fracture short. In transverse section, dark with a large pith and diffuse ring of small wood-bundles. Strong, characteristic, disagreeable odour.

VALERIANÆ RHIZOMA

Valerian Rhizome

Synonym—Valerian Root

Valerian Rhizome is the dried rhizome and roots of *Valeriana officinalis*, *Linn.* Collected in the autumn.

Characters and Test.—Rhizome short, erect, entire or sliced, dark yellowish-brown externally, whitish internally. Roots numerous, about seven to ten centimetres long, of the same colour as the rhizome, slender, brittle. Strong, characteristic, disagreeable odour; taste unpleasant, camphoraceous, slightly bitter. Ash not more than 10 per cent.

Veronal. P. 62

VIBURNUM

Black Haw

Black Haw is the dried bark of *Viburnum prunifolium*, *Linn.*

Characters.—In quills or curved pieces, one to four millimetres thick; dull brown or reddish-brown. Outer surface longitudinally wrinkled or, in older bark, with shallow fissures and scaly; inner surface longitudinally striated, reddish-brown. Fracture granular. In transverse section, a dark brown outer portion and a whitish or reddish bast with numerous groups of sclerenchymatous cells. Slight odour; taste astringent and bitter.

VINUM ANTIMONIALE

Antimonial Wine

Tartarated Antimony . . .	4 grammes
Distilled Water, boiling . . .	40 millilitres
Sherry sufficient to produce . .	1000 millilitres

Dissolve the Tartarated Antimony in the Distilled Water, and add sufficient Sherry to produce the required volume.

*Dose.**Metric.*

6 to 18 decimils.

Imperial.

10 to 30 minims.

As an emetic.

8 to 16 mils.

2 to 4 fluid drachms.

VINUM AURANTII

Orange Wine

Orange Wine is made by the fermentation of a saccharine solution to which Fresh Bitter-Orange Peel has been added.

Characters and Tests.—A vinous liquid, having a golden sherry colour, and a taste and aroma derived from the Bitter-Orange Peel. Contains from 15 to 17 per cent. by volume of ethyl hydroxide. Not more than slightly acid to *litmus-paper*. When 50 millilitres are made alkaline with *solution of sodium hydroxide*, evaporated to a small bulk, acidified with *hydrochloric acid*, and shaken with *benzene*, the residue obtained on evaporating the benzene solution, when dissolved in *water*, does not assume a violet colour on the addition of a drop of *T.Sol. of ferric chloride* (absence of salicylic acid.) Yields not more than the slightest characteristic *reactions* for sulphites.

* 12 to 14

VINUM COLCHICI

Colchicum Wine

Colchicum Corm, in No. 20 pow-

der	.	.	.	.	.	200 grammes
Sherry	.	.	.	.	.	1000 millilitres

Prepare by the *maceration process*.

	<i>Metric.</i>	<i>Dose.</i>	<i>Imperial.</i>
	6 to 18 decimils.		10 to 30 minims.

VINUM FERRI

Iron Wine

Iron, in wire		50 grammes
Sherry		1000 millilitres

In a closed vessel partially immerse the Iron in Sherry ; continue the maceration until it responds to the following test :—

Evaporate 50 millilitres to dryness, incinerate the residue, heat the ash with *hydrochloric acid* diluted with an equal volume of *water*, filter, wash the filter paper with *water*, and add to the mixed filtrate and washings excess of *solution of ammonia*. Collect the precipitate, wash, dry and ignite ; the residue weighs not less than 0·089 or more than 0·215 gramme, representing a proportion of not less than 0·125 or more than 0·300 gramme of iron, calculated as Fe, in 100 millilitres of the Wine.

Filter the remaining liquid.

	<i>Metric.</i>	<i>Dose.</i>	<i>Imperial.</i>
	4 to 16 mils.		1 to 4 fluid drachms.

VINUM FERRI CITRATIS

Wine of Iron Citrate

Iron and Ammonium Citrate		18·3 grammes
Or ange Wine sufficient to pro-		
duce		1000·0 millilitres

Dissolve. Shake occasionally for three days ; filter.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
4 to 16 mils.	1 to 4 fluid drachms.

VINUM IPECACUANHÆ

Ipecacuanha Wine

Liquid Extract of Ipecacuanha	50 millilitres
Sherry	950 millilitres

Mix ; set aside for forty-eight hours ; filter.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
6 to 18 decimils (expectorant).	10 to 30 minims (expectorant).
16 to 20 mils (emetic).	4 to 6 fluid drachms (emetic).

VINUM QUININÆ

Quinine Wine

Quinine Hydrochloride	2 grammes
Orange Wine	875 millilitres

Dissolve ; filter if necessary.

Dose.

<i>Metric.</i>	<i>Imperial.</i>
16 to 30 mils.	$\frac{1}{2}$ to 1 fluid ounce.

VINUM XERICUM

Sherry

Sherry is a Spanish wine.

Characters and Tests.—Pale yellowish-brown, containing not less than 16 per cent. by volume of ethyl hydroxide. Contains in 100 millilitres not less than 0·1 or more than 0·2 gramme of volatile acids, calculated as acetic acid, and not less than 0·3 or more than 0·45 gramme of fixed acids, calculated as tartaric acid, when tested by the following process :—

(1) Titrate 25 millilitres of the Wine with *N/5 solution of sodium hydroxide*, *solution of phenolphthalein* being used as indicator, and note the number (*a*) of millilitres of solution required.

(2) Introduce 25 millilitres of the Wine into a flask capable of holding 200 millilitres and attach a condenser ; add 0·5 gramme of *tannic acid*, and distil gently until about 25 millilitres have been collected. Then pass a current of steam through the residual liquid in the flask, and continue the distillation until about 200 millilitres have been collected. Titrate the distillate with *N/5 solution of sodium hydroxide*, *phenolphthalein* being used as indicator. The number (*b*) of millilitres of solution required is not less than 2·1 or more than 4·2, representing a proportion of not less than 0·1 or more than 0·2 gramme of volatile acids, calculated as acetic acid, in 100 millilitres of the Wine. Deduct the number (*b*) of millilitres required in (2) from the number (*a*) of millilitres required in (1). The difference is not less than 5 or more than 7·5, representing a proportion of not less than 0·3 or more than 0·45 gramme of fixed acids, calculated as tartaric acid, in 100 millilitres of the Wine.

When 50 millilitres of the Wine are made alkaline with *solution of sodium hydroxide*, evaporated to a small bulk, acidified with *hydrochloric acid* and shaken with *benzene*, the residue obtained on evaporating the benzene solution, when dissolved in *water*, does not assume a violet colour

on the addition of a drop of *T. Sol of ferric chloride* (absence of salicylic acid).

ZINCI ACETAS

Zinc Acetate

Zinc Acetate, $\text{Zn}(\text{C}_2\text{H}_3\text{O}_2)_2 \cdot 2\text{H}_2\text{O}$, may be obtained by neutralising acetic acid with zinc carbonate.

Characters and Tests.—Thin, translucent, colourless, crystalline plates, of a pearly lustre. Taste sharp and unpleasant. Soluble in 2·5 parts of *water*. Yields the *reactions* characteristic of zinc and of acetates. Yields no characteristic *reactions* for lead, copper, cadmium, iron, aluminium, calcium, magnesium, sodium, potassium, ammonium, chlorides, or sulphates. *Arsenic limit* 5 parts per million. 0·5 gramme, tested as described under 'Zinci Sulphas,' yields a solution with not more than a faint pink coloration (limit of manganese).

Dose.

Metric.

6 to 12 centigrams.

Imperial.

1 to 2 grains.

ZINCI CARBONAS

Zinc Carbonate

Zinc Carbonate, or hydrated zinc carbonate, may be obtained by the interaction of zinc sulphate and sodium carbonate.

Characters and Tests.—White amorphous powder. No odour or taste. Insoluble in *water*; entirely soluble in *diluted nitric acid*. Yields the *reactions* characteristic

of zinc and of carbonates. Yields no characteristic *reactions* for lead, copper, cadmium, iron, aluminium, calcium, magnesium, sodium, potassium, or ammonium, and not more than the slightest *reactions* for chlorides or sulphates. *Arsenic limit* 10 parts per million. 0·2 gramme, dissolved in *diluted sulphuric acid*, and tested as described under 'Zinci Sulphas,' yields a solution with not more than a faint pink coloration (limit of manganese).

ZINCI CHLORIDUM

Zinc Chloride

Zinc Chloride, ZnCl_2 , may be obtained by the inter-action of hydrochloric acid and zinc.

Characters and Tests.—Colourless opaque rods or tablets, or in granules, very deliquescent and caustic. Almost entirely soluble in *water*, in *alcohol* (90 per cent.), and in *ether*. Yields the *reactions* characteristic of zinc and of chlorides. Yields no characteristic *reactions* for lead, copper, cadmium, iron, aluminium, calcium, magnesium, sodium, potassium, ammonium, or sulphates. *Arsenic limit* 5 parts per million. 0·25 gramme, tested as described under 'Zinci Sulphas,' yields a solution with not more than a faint pink coloration (limit of manganese).

ZINCI OLEOSTEARAS

Zinc Oleostearate

Hard Soap	200 grammes
Curd Soap	100 grammes
Zinc Sulphate	100 grammes
Distilled Water	a sufficient quantity

Dissolve the Soaps in one thousand five hundred milli-

litres of the Distilled Water by the aid of heat ; add to the solution the Zinc Sulphate previously dissolved in two hundred millilitres of the Distilled Water. Collect the precipitate, wash it with Distilled Water until the washings are free from sulphates, dry it, and reduce it to a fine powder.

Characters and Tests.—A white amorphous powder. Odour faint, resembling that of fat. Insoluble in *water*, in *alcohol* (90 per cent.) and in *ether*. Ash about 12·9 per cent., and this, dissolved in *hydrochloric acid* and the solution neutralised, yields the *reactions* characteristic of zinc. When 0·5 gramme is heated with 0·5 millilitre of *hydrochloric acid* diluted with 0·5 millilitre of *water*, a mixture of fatty acids is liberated and floats on the surface of the aqueous liquid ; this liquid, filtered, neutralised with *solution of ammonia*, treated with excess of *solution of ammonium hydrosulphide*, again filtered, evaporated to dryness, and the product gently ignited, leaves no appreciable residue (absence of fixed alkalies and of alkaline earths.)

ZINCI OXIDUM

Zinc Oxide

Zinc Oxide, ZnO , may be obtained from metallic zinc by combustion in air.

Characters and Tests.—A soft, white or nearly white, amorphous powder, becoming pale yellow when heated. No odour or taste. Yields the *reactions* characteristic of zinc. Entirely soluble when triturated and, if necessary, warmed, with *solution of ammonia* mixed with *strong solution of ammonia* (absence of metallic zinc). Yields no characteristic *reactions* for copper, cadmium, iron, aluminium, calcium, magnesium, sodium, potassium, ammonium, and only slight *reactions* lead and carbonates. *Arsenic limit* 10 parts per million. 0·2 gramme, dissolved

in *diluted sulphuric acid*, and tested as described under 'Zinci Sulphas,' yields a solution with not more than a faint pink coloration (limit of manganese).

Dose.

Metric.

2 to 6 decigrams.

Imperial.

3 to 10 grains.

ZINCI SULPHAS

Zinc Sulphate

Zinc Sulphate, $\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$, may be obtained by the interaction of diluted sulphuric acid and zinc.

Characters and Tests.—Colourless, transparent, prismatic crystals. Taste metallic, styptic. Soluble in less than 1 part of *water*. Yields the *reactions* characteristic of zinc and of sulphates. Yields no characteristic *reactions* for lead, copper, cadmium, aluminium, calcium, magnesium, sodium, potassium, ammonium, or acetates, and not more than the slightest *reactions* for iron or chlorides. *Arsenic limit* 5 parts per million. When 0.5 gramme is dissolved in *water*, excess of *solution of ammonia* added, and the mixture allowed to stand, any precipitate that is obtained being filtered off and dissolved in *diluted nitric acid*, then this solution, diluted with *water* to about 15 millilitres and heated to boiling, does not acquire more than a faint pink coloration on the addition of 1 millilitre of *N/10 solution of silver nitrate* and 10 millilitres of a 10 per cent. aqueous solution of *ammonium persulphate* (limit of manganese).

Dose.

Metric.

6 to 20 centigrams (tonic).

6 to 20 decigrams (emetic).

Imperial.

1 to 3 grains (tonic).

10 to 30 grains (emetic).

ZINCI VALERIANAS

Zinc Valerianate

Zinc Valerianate, or zinc iso-valerianate, $\text{Zn}(\text{C}_5\text{H}_9\text{O}_2)_2 \cdot 2\text{H}_2\text{O}$, may be obtained by saturating iso-valerianic acid with zinc carbonate, or by the interaction of zinc sulphate and sodium iso-valerianate.

Characters and Tests.—White, pearly, tabular crystals. Disagreeable odour; taste metallic. Very slightly soluble in cold water, or in ether; soluble in hot water, and in alcohol (90 per cent.). Yields, when heated to redness, after moistening with a small quantity of nitric acid, not less than 26 or more than 27 per cent of zinc oxide. Yields no characteristic reactions for lead, copper, cadmium, iron, aluminium, calcium, magnesium, sodium, potassium, ammonium, acetates, or carbonates, and not more than the slightest reactions for chlorides or sulphates. Arsenic limit 5 parts per million. When heated with diluted sulphuric acid it gives a distillate which, when mixed with solution of copper acetate, does not immediately affect the transparency of the liquid, but forms after a short time oily drops, which gradually pass into a bluish-white crystalline deposit (absence of butyrates). 0·2 gramme of the zinc oxide obtained on incineration, dissolved in diluted sulphuric acid, and tested as described under 'Zinci Sulphas,' yields a solution with not more than a faint pink coloration (limit of manganese).

*Dose.**Metric.*

6 to 20 centigrams.

Imperial.

1 to 3 grains.

ZINGIBER

Ginger

Ginger is the scraped and dried rhizome of *Zingiber officinale*, *Roscoe*.

Characters and Tests.—In flattish, irregularly branched pieces, usually from seven to ten centimetres long; each branch marked at its summit by a depressed scar. Fracture short with projecting fibres. Agreeable, aromatic odour; taste pungent. When 5 grammes of the powdered rhizome are shaken with 100 millilitres of *alcohol* (90 per cent.) occasionally during twenty-four hours, 20 millilitres of the filtrate yield on evaporation not less than 0·050 gramme of residue dried at 100°; and when 5 grammes are similarly treated with 100 millilitres of *water*, 20 millilitres of the filtrate yield not less than 0·085 gramme of residue. Ash not more than 6 per cent.; and after deduction of that portion of the ash which is soluble in *water* not more than 1·5 per cent.

APPENDICES

	PAGE
I ARTICLES AND REAGENTS EMPLOYED IN CHEMICAL TESTING	465
II SOLUTIONS EMPLOYED IN CHEMICAL TESTING	473
III SOLUTIONS EMPLOYED FOR VOLUMETRIC DETERMINATIONS	484
INDICATORS OF THE TERMINATION OF REACTIONS IN VOLUMETRIC DETERMINATIONS	486
IV REACTIONS AND TESTS FOR SUBSTANCES MENTIONED IN THE TEXT OF THE BRITISH PHARMACOPOEIA	483
V QUANTITATIVE LIMIT TEST FOR LEAD	497
VI QUANTITATIVE LIMIT TEST FOR ARSENIC	501
VII DETERMINATION OF :—	
ACID VALUE OF FIXED OILS, FATS, WAXES AND RESINS	520
SAPONIFICATION VALUE OF FIXED OILS, FATS, WAXES AND RESINS	521
IODINE VALUE OF FIXED OILS AND FATS	521
UNSAAPONIFIABLE MATTER IN FIXED OILS AND FATS	522
ESTERS IN VOLATILE OILS	523
ALCOHOLS IN VOLATILE OILS	523
ALKALOIDAL VALUE : LIMIT OF ERROR	524
VIII DETERMINATION OF :—	
MELTING POINTS	524
BOILING POINTS	525
REFRACTIVE INDICES	525
OPTICAL ROTATION	525
SPECIFIC GRAVITY	526

	PAGE
IX PROCESSES FOR :—	
PERCOLATION	526
REPERCOLATION	526
MACERATION	527
X PROCESS FOR PREPARATION OF DISCS (LAMELLÆ)	527
XI PROCESSES FOR PREPARATION OF LOZENGES	528
XII ALTERNATIVE PROCESSES SANCTIONED FOR USE IN TROPICAL, SUBTROPICAL, AND OTHER PARTS OF THE BRITISH EMPIRE	529
XIII TABLE OF PROPORTIONS RELATING TO THE PREPARATION OF DILUTED ALCOHOLS	530
XIV NAMES, SYMBOLS AND ATOMIC WEIGHTS OF THE CHIEF ELEMENTARY BODIES MENTIONED IN THE BRITISH PHARMACOPŒIA	531
XV WEIGHTS AND MEASURES OF THE BRITISH PHARMA- COPŒIA :—	
METRIC : MASS, CAPACITY, LENGTH	532
IMPERIAL : MASS, CAPACITY	532
RELATION OF VOLUME TO MASS	532
RELATION OF THE METRIC STANDARDS TO THE IMPERIAL STANDARDS	533
RELATION OF THE IMPERIAL STANDARDS TO THE METRIC STANDARDS	533
XVI TABLE OF APPROXIMATE EQUIVALENCES ADOPTED IN STATING DOSES (IMPERIAL AND METRIC) IN THE TEXT OF THE BRITISH PHARMACOPŒIA	534
XVII ABBREVIATED LATIN NAMES OF OFFICIAL DRUGS AND PREPARATIONS ADOPTED IN THE INDEX OF THE BRITISH PHARMACOPŒIA, AND COMMONLY USED IN WRITING PRESCRIPTIONS	535

101. The first of these is the fact that the
 102. second is the fact that the
 103. third is the fact that the
 104. fourth is the fact that the
 105. fifth is the fact that the
 106. sixth is the fact that the
 107. seventh is the fact that the
 108. eighth is the fact that the
 109. ninth is the fact that the
 110. tenth is the fact that the
 111. eleventh is the fact that the
 112. twelfth is the fact that the
 113. thirteenth is the fact that the
 114. fourteenth is the fact that the
 115. fifteenth is the fact that the
 116. sixteenth is the fact that the
 117. seventeenth is the fact that the
 118. eighteenth is the fact that the
 119. nineteenth is the fact that the
 120. twentieth is the fact that the

121. The first of these is the fact that the
 122. second is the fact that the
 123. third is the fact that the
 124. fourth is the fact that the
 125. fifth is the fact that the
 126. sixth is the fact that the
 127. seventh is the fact that the
 128. eighth is the fact that the
 129. ninth is the fact that the
 130. tenth is the fact that the

APPENDICES

I

ARTICLES AND REAGENTS EMPLOYED IN CHEMICAL TESTING

Acetic Acid of the British Pharmacopœia.

Acetic Acid, Diluted, of the British Pharmacopœia.

Acetic Acid, Glacial, of the British Pharmacopœia.

Acetic Anhydride, $C_4H_6O_3$, of commerce, pure.

Acetone of the British Pharmacopœia.

Albumen, the liquid white of fresh eggs.

Alcohol, Absolute, of the British Pharmacopœia.

Alcohol (90 per cent.) of the British Pharmacopœia.

Alcohol (70 per cent.) of the British Pharmacopœia.

Alcohol (20 per cent.) of the British Pharmacopœia.

Alum of the British Pharmacopœia.

Ammonium Chloride of the British Pharmacopœia.

Ammonium Molybdate $(NH_4)_2MoO_4$, of commerce, pure.

Ammonium Oxalate $(NH_4)_2C_2O_4 \cdot H_2O$, of commerce, pure.

Ammonium Persulphate, NH_4SO_4 , of commerce, pure.

1. The first group of people who are interested in the study of the history of the world are the historians. They are people who study the past and try to understand what happened and why it happened. They use a variety of sources, including books, documents, and artifacts, to reconstruct the past. They also try to understand the people who lived in the past and how they thought and felt. Historians are interested in the history of the world because it helps us to understand the world we live in today.

1890-1891

Ammonium Thiocyanate, NH_4SCN , of commerce, pure.

Amylic Alcohol is a liquid consisting principally of iso-primary amylic alcohol, $\text{C}_5\text{H}_{11}\text{OH}$, and may be prepared by shaking commercial fusel oil with a saturated solution of common salt, separating the oily layer, submitting it to distillation, and collecting and reserving the fraction which distils between 125° and 143° .

Aniline of commerce, redistilled.

Animal Charcoal of commerce, purified.

Auric Chloride, AuCl_3 , of commerce, pure.

Barium Chloride, $\text{BaCl}_2 \cdot 2\text{H}_2\text{O}$, of commerce, pure.

Barium Hydroxide, $\text{Ba}(\text{OH})_2 \cdot 8\text{H}_2\text{O}$, of commerce, pure.

Benzene of the British Pharmacopœia.

Benzolated Amylic Alcohol.

Benzene 3 parts by volume

Amylic Alcohol 1 part by volume

Mix; decant from any deposited water.

Bismuth Oxynitrate of the British Pharmacopœia.

Borax, Purified, of the British Pharmacopœia.

Bromine of commerce, pure.

Cadmium Iodide, CdI_2 , of commerce, pure.

Calcium Carbonate, the pure white marble, or calc spar,
of commerce.

Calcium Hydroxide of the British Pharmacopœia.

Calcium Oxide of the British Pharmacopœia.

Calcium Sulphate, $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$, native, pure.

Carbon Disulphide of the British Pharmacopœia.

Carbon Tetrachloride, CCl_4 , of commerce, pure.

Chlorine, a gas prepared by the interaction of Hydrochloric Acid and Manganese Peroxide, and purified by passing through a small quantity of water contained in a wash bottle.

Chloroform of the British Pharmacopœia.

Chloroform Water of the British Pharmacopœia.

Citric Acid of the British Pharmacopœia.

Collodion of the British Pharmacopœia.

Copper in foil, wire, or turnings.

Copper Acetate, $\text{Cu}(\text{C}_2\text{H}_3\text{O}_2)_2 \cdot \text{H}_2\text{O}$, of commerce, crystalline, pure.

Copper Carbonate, precipitated, of commerce.

Copper Sulphate of the British Pharmacopœia.

Ether of the British Pharmacopœia.

Ferric Ammonium Sulphate, $\text{Fe}_2(\text{SO}_4)_3 \cdot (\text{NH}_4)_2\text{SO}_4 \cdot 24\text{H}_2\text{O}$, of commerce, pure.

Ferric Chloride of commerce, pure, anhydrous.

Ferrous Sulphate of the British Pharmacopœia.

Fuchsin of commerce, pure.

Glycerin of the British Pharmacopœia.

Hydrochloric Acid of the British Pharmacopœia.

Hydrochloric Acid, Diluted, of the British Pharmacopœia.

Hydrochloric Acid, Gaseous, HCl , dry, prepared by the interaction of sulphuric acid and common salt.

Hydrogen Sulphide, *Synonym*.—Sulphuretted Hydrogen.
A gas prepared by the action of hydrochloric acid on ferrous sulphide. It will be sufficiently pure after passing through two wash bottles each containing water. A solution of the gas in *water* may also be employed, but only if it smells strongly of the gas, and yields an abundant black precipitate with *solution of lead acetate*.

Hydroxylamine Hydrochloride, $\text{NH}_2\text{OH}\cdot\text{HCl}$, of commerce, pure.

Hypophosphorous Acid of commerce, specific gravity 1.137.

Indigo, a blue pigment prepared from various species of *Indigofera*, *Linn.*

Iodic Acid, HIO_3 , of commerce, pure.

Iodine of the British Pharmacopœia.

Iron of the British Pharmacopœia.

Isinglass, the swimming bladder or sound of various species of *Acipenser*, *Linn.*, prepared and cut into shreds.

Lead Acetate of the British Pharmacopœia.

Lead Nitrate, $\text{Pb}(\text{NO}_3)_2$, of commerce, pure.

Lead Oxide of the British Pharmacopœia.

Lead Peroxide, PbO_2 , of commerce, pure.

Lime of the British Pharmacopœia.

Litmus, a blue pigment prepared from various species of *Roccella*, *DC.* Litmus is used in several forms; for

example, Solution of Litmus (Appendix II) ; Blue Litmus Paper, made by impregnating unglazed white paper with a solution of litmus ; and Red Litmus Paper, made by impregnating the paper with the solution reddened by the previous addition of a very minute quantity of sulphuric acid. Litmus may also be employed in the solid form.

Magnesia, Heavy, of the British Pharmacopœia.

Manganese Peroxide, MnO_2 , the powdered native pyrolusite.

Mercurous Chloride of the British Pharmacopœia.

Methyl Orange, pure sodium dimethyl-amido-azo-benzene-sulphonate, $\text{NaC}_{14}\text{H}_{14}\text{N}_3\text{SO}_3$, of commerce.

Milk of Lime.

Lime	100 grammes
Distilled Water	200 millilitres
Mix.	

Morphinated Water, prepared by digesting pure *Morphine* in Chloroform Water for seven days at a temperature of 15.5° , shaking occasionally so as to obtain a saturated solution of the alkaloid, and filtering from the undissolved morphine.

Morphine, the precipitate obtained on adding *solution of ammonia*, in slight excess, to the solution of a pure morphine salt in *water*, the precipitate being washed with *water* until free from ammonium salt.

Mucilage of Gum Acacia of the British Pharmacopœia.

Mucilage of Starch. Triturate 1 gramme of Starch with a small quantity of Distilled Water to form a smooth paste ; add more Distilled Water, gradually, to produce 50 millilitres of mixture ; boil for a few minutes, constantly stirring ; cool.

Mucilage of Starch must be recently prepared.

Nitric Acid of the British Pharmacopœia.

Nitric Acid, Diluted, of the British Pharmacopœia.

Nitric Acid, Fuming, of commerce, specific gravity 1.5.

Oil of Turpentine of the British Pharmacopœia.

Olive Oil of the British Pharmacopœia.

Oxalic Acid, $\text{H}_2\text{C}_2\text{O}_4 \cdot 2\text{H}_2\text{O}$, of commerce, pure.

Paraffin, Soft, of the British Pharmacopœia.

Petroleum Spirit, *Synonym*.—Petroleum Ether. A colourless, very volatile and highly inflammable liquid obtained from petroleum, and consisting of a mixture of the lower members of the paraffin series of hydrocarbons. Boiling point 50° to 60° . Specific gravity 0.670 to 0.700.

Phenol of the British Pharmacopœia.

Phenol-Disulphonic Acid. Heat 3 grammes of Phenol with 20 millilitres of Sulphuric Acid on a water-bath for six hours. Transfer the resulting liquid to a stoppered bottle.

Phenolphthalein of the British Pharmacopœia.

Phosphoric Acid, Concentrated, of the British Pharmacopœia.

Phosphoric Acid, Syrupy, of commerce, specific gravity 1.750.

Picric Acid of the British Pharmacopœia.

Platinic Chloride of commerce, pure.

Potassium Bichromate of the British Pharmacopœia.

Potassium Chlorate of the British Pharmacopœia.

Potassium Chromate, K_2CrO_4 , of commerce, pure.

Potassium Cyanide of commerce. Contains not less than 90 per cent. of pure potassium cyanide, KCN.

Potassium Ferricyanide, $K_3Fe(CN)_6$, of commerce, pure.

Potassium Ferrocyanide, $K_4Fe(CN)_6 \cdot 3H_2O$, of commerce, pure.

Potassium Hydrogen Sulphite, *Synonym*.—Potassium Acid Sulphite, $KHSO_3$, of commerce, pure.

Potassium Hydroxide of the British Pharmacopœia.

Potassium Iodide of the British Pharmacopœia.

Potassium Nitrate of the British Pharmacopœia.

Potassium Permanganate of the British Pharmacopœia.

Potassium Sulphate of the British Pharmacopœia.

Resorcin of the British Pharmacopœia.

Salicylic Acid of the British Pharmacopœia.

Sodium Acetate, $NaC_2H_3O_2 \cdot 3H_2O$, of commerce, pure.

Sodium Acetate, Anhydrous, $NaC_2H_3O_2$, of commerce, pure.

Sodium Arsenate, Anhydrous, of the British Pharmacopœia.

Sodium Bicarbonate of the British Pharmacopœia.

Sodium Carbonate of the British Pharmacopœia.

Sodium Carbonate, Exsiccated, of the British Pharmacopœia.

Sodium Chloride of the British Pharmacopœia.

Sodium Hydrogen Sulphite, *Synonym.*—Sodium Acid Sulphite, NaHSO_3 , of commerce, pure.

Sodium Hydroxide of commerce, purified by means of alcohol.

Sodium Nitrite of the British Pharmacopœia.

Sodium Potassium Tartrate of the British Pharmacopœia.

Sodium Sulphate of the British Pharmacopœia.

Sodium Sulphate, Anhydrous, the Sodium Sulphate of the British Pharmacopœia, rendered anhydrous by heat.

Sodium Sulphide, $\text{Na}_2\text{S}\cdot 9\text{H}_2\text{O}$, of commerce, pure.

Sodium Sulphite of the British Pharmacopœia.

Sodium Thiosulphate, $\text{Na}_2\text{S}_2\text{O}_3\cdot 5\text{H}_2\text{O}$, of commerce, pure.

Sugar, Refined, of the British Pharmacopœia.

Sulphur, Precipitated, of the British Pharmacopœia.

Sulphuric Acid of the British Pharmacopœia.

Sulphuric Acid, Diluted, of the British Pharmacopœia

Talc, Powdered, a natural magnesium silicate, powdered and purified by boiling with diluted hydrochloric acid, washing with distilled water until neutral to litmus, and drying.

Tartaric Acid of the British Pharmacopœia.

Tin, granulated by letting drops of the metal in the molten state fall into water. Yields no characteristic *reactions* for lead, copper, iron, or zinc.

Turmeric, the dried rhizome of *Curcuma longa*, *Linn.* It is usually employed in the form of a tincture prepared, by

the process of maceration, from the bruised rhizome, in the proportion of 1 gramme to 6 millilitres of Alcohol (90 per cent.), or in the form of paper prepared by steeping unglazed white paper in the tincture and drying.

Uranium Nitrate, $\text{UO}_2(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$, of commerce, pure.

Water, the Distilled Water of the British Pharmacopœia.

Zinc, the laminated or granulated metal. Completely dissolved by *dilute hydrochloric acid*, the solution yielding no characteristic *reactions* for lead, copper, cadmium, arsenic, tin, or iron.

Zinc Carbonate of the British Pharmacopœia.

II

SOLUTIONS EMPLOYED IN CHEMICAL TESTING

Solution of Albumen

Albumen 20 millilitres

Distilled Water 80 millilitres

Mix by trituration in a mortar, and filter through clean tow previously moistened with Distilled Water.

Solution of Albumen must be recently prepared. The strength of the Solution may be adjusted to suit particular requirements.

Solution of Ammonia of the British Pharmacopœia.

Solution of Ammonia, Strong, of the British Pharmacopœia.

Solution of Ammonium Acetate of the British Pharmacopœia.

Solution of Ammonium Carbonate

Ammonium Carbonate 5.0 grammes

Solution of Ammonia 7.5 millilitres

Distilled Water sufficient to produce . . . 100.0 millilitres

Dissolve; filter if necessary.

Solution of Ammonium Chloride

Ammonium Chloride	10 grammes
Distilled Water sufficient to produce	100 millilitres
Dissolve ; filter if necessary.	

Solution of Ammonium Chloride (Nessler's)

Ammonium Chloride	3·15 grammes
Distilled Water, free from ammonia, sufficient to produce	1000·00 millilitres
Dissolve.	

Solution of Ammonium Chloride, Dilute (Nessler's)

Solution of Ammonium Chloride (Nessler's)		10 millilitres
Distilled Water, free from ammonia, sufficient to produce		100 millilitres
Mix.		

Solution of Ammonium Citrate of the British Pharmacopœia.**Solution of Ammonium Hydrosulphide**

Saturate one hundred and twenty millilitres of Solution of Ammonia with washed Hydrogen Sulphide ; add eighty millilitres of Solution of Ammonia.

This Solution must be recently prepared.

Solution of Ammonium Molybdate

Ammonium Molybdate	10 grammes
Distilled Water sufficient to produce	100 millilitres
Dissolve ; filter if necessary.	

Solution of Ammonium Oxalate

Ammonium Oxalate	2·5 grammes
Distilled Water sufficient to produce	100·0 millilitres
Dissolve ; filter if necessary.	

Solution of Auric Chloride

Auric Chloride	2 grammes
Distilled Water sufficient to produce	100 millilitres
Dissolve ; filter if necessary.	

Solution of Barium Chloride

Barium Chloride, in crystals . . .	10 grammes
Distilled Water sufficient to produce . . .	100 millilitres
Dissolve ; filter if necessary.	

Solution of Barium Hydroxide

Barium Hydroxide	3 grammes
Distilled Water, recently boiled, sufficient to produce	100 millilitres
Dissolve ; filter if necessary.	

Solution of Boric Acid

Boric Acid	2.5 grammes
Alcohol (90 per cent.) sufficient to produce	100.0 millilitres
Dissolve ; filter if necessary.	

Solution of Bromine

A saturated solution of Bromine in Distilled Water.

Solution of Cadmium Iodide

Cadmium Iodide	5 grammes
Distilled Water sufficient to produce . . .	100 millilitres
Dissolve ; filter if necessary.	

Solution of Calcium Chloride

Calcium Chloride, fused	10 grammes
Distilled Water sufficient to produce . . .	100 millilitres
Dissolve ; filter if necessary.	

Solution of Calcium Sulphate

A saturated solution of Calcium Sulphate in Distilled Water.

Solution of Chlorinated Soda of the British Pharmacopœia.**Solution of Chlorine**

A saturated solution of Chlorine in Distilled Water.

This Solution must be recently prepared.

Solution of Chromic Acid of the British Pharmacopœia.

Solution of Copper Acetate

Copper Acetate.	5 grammes
Distilled Water sufficient to produce . .	100 millilitres
Dissolve ; filter if necessary.	

Solution of Copper Acetate, Diluted

Solution of Copper Acetate	1 millilitre
Distilled Water sufficient to produce . .	100 millilitres
Mix.	

Solution of Copper Ammonio-Sulphate

Copper Sulphate, in crystals	5 grammes
Solution of Ammonia	a sufficient quantity
Distilled Water sufficient to produce . .	100 millilitres

Dissolve the Copper Sulphate in one hundred and sixty millilitres of the Distilled Water, and cautiously add the Solution of Ammonia to the liquid until the precipitate first formed is nearly dissolved ; filter the product ; finally add sufficient of the Distilled Water to produce the required volume.

Solution of Copper Oxide, Ammoniacal

Copper Carbonate	5 grammes
Strong Solution of Ammonia	100 millilitres

Shake together occasionally during twelve hours ; set aside for twenty-four hours, and pour off the clear liquid.

This Solution must be freshly prepared.

Solution of Copper Sulphate

Copper Sulphate	10 grammes
Distilled Water sufficient to produce . .	100 millilitres
Dissolve ; filter if necessary.	

Solution of Ferric Sulphate of the British Pharmacopœia.**Solution of Ferrous Sulphate**

Ferrous Sulphate	2 grammes
Distilled Water sufficient to produce . .	100 millilitres
Dissolve ; filter if necessary.	

This Solution must be recently prepared.

Solution of Formaldehyde of the British Pharmacopœia.**Solution of Fuchsin, Decolorised**

Dissolve one gramme of Fuchsin in five hundred millilitres of hot Distilled Water; add slowly twenty millilitres of a saturated aqueous solution of Acid Sodium Sulphite, and then, also slowly, ten millilitres of Hydrochloric Acid, the mixture being kept well shaken. Cool and add sufficient Distilled Water to produce one thousand millilitres.

Solution of Hydrogen Peroxide of the British Pharmacopœia.**Solution of Indigo Sulphate**

Indigo, dry and in fine powder	.	.	.	0.1 gramme
Sulphuric Acid	.	.	.	100.0 millilitres

Mix the Indigo with one millilitre of the Sulphuric Acid in a small test-tube, and heat in boiling water for an hour; pour the product into the remainder of the Sulphuric Acid; shake the mixture; decant the clear liquid.

Solution of Isinglass

Isinglass, in shreds	.	.	.	2 grammes
Distilled Water sufficient to produce	.	.	.	100 millilitres

Mix, and digest for half an hour on a water-bath with repeated shaking; filter through clean tow previously moistened with Distilled Water.

This Solution must be recently prepared.

Solution of Lead Acetate

Lead Acetate	.	.	.	10 grammes
Distilled Water, recently boiled, sufficient to produce	.	.	.	100 millilitres

Dissolve; filter if necessary.

Solution of Lead Subacetate, the Strong Solution of Lead Subacetate of the British Pharmacopœia, diluted, if necessary, with Distilled Water.

Solution of Lime, *Synonym*.—Solution of Calcium Hydroxide, of the British Pharmacopœia.

Solution of Litmus

Litmus, in powder	10 grammes
Alcohol (90 per cent.)	100 millilitres
Distilled Water	100 millilitres

Boil the Litmus with forty millilitres of the Alcohol for one hour; pour away the clear liquid; repeat this operation with thirty millilitres of the Alcohol, and a third time with the remainder of the Alcohol. Digest the washed Litmus in the Distilled Water, and filter.

Solution of Magnesium Ammonio-Sulphate

Magnesium Sulphate	10 grammes
Ammonium Chloride	20 grammes
Solution of Ammonia	42 millilitres
Distilled Water	80 millilitres

Dissolve the Magnesium Sulphate and Ammonium Chloride in the Distilled Water; add the Solution of Ammonia, and set the mixture aside for a few days in a well-closed bottle; decant and filter.

Solution of Magnesium Sulphate

Magnesium Sulphate	10 grammes
Distilled Water sufficient to produce	100 millilitres

Dissolve; filter if necessary.

Solution of Mercurous Nitrate

Mercury	2 grammes
Nitric Acid	1 millilitre
Distilled Water	a sufficient quantity

To the Mercury, in a small dish, add one millilitre of Distilled Water and the Nitric Acid, and set the whole aside for twenty-four hours in a cool dark place; drain the resulting crystals; dissolve them in two hundred millilitres of Distilled Water.

Solution of Mercury Nitrate, *Synonym.*—Millon's Reagent

Mercury	3 millilitres
Fuming Nitric Acid	27 millilitres
Distilled Water	a sufficient quantity

Dissolve without heat; dilute the solution with an equal volume of Distilled Water.

This Solution must be recently prepared.

Solution of Methyl Orange

Methyl Orange	0.2 gramme
Alcohol (90 per cent.)	25.0 millilitres
Distilled Water sufficient to produce	100.0 millilitres
Dissolve.	

Solution of Phenolphthalein

Phenolphthalein	0.2 gramme
Alcohol (90 per cent.)	60.0 millilitres
Distilled Water sufficient to produce	100.0 millilitres
Dissolve.	

Solution of Picric Acid

Picric Acid	0.66 gramme
Distilled Water sufficient to produce	100.00 millilitres
Dissolve.	

Solution of Platinic Chloride

Platinic Chloride	5 grammes
Distilled Water sufficient to produce	100 millilitres
Dissolve.	

Solution of Potassio-Cupric Tartrate, *Synonym.*—Fehling's Solution

No. 1.

Copper Sulphate, in crystals	34.64 grammes
Sulphuric Acid	0.50 millilitre
Distilled Water sufficient to produce	500.00 millilitres
Dissolve.	

No. 2.

Sodium Potassium Tartrate	176 grammes
Sodium Hydroxide	77 grammes
Distilled Water sufficient to produce	500 millilitres
Dissolve.	

Mix equal volumes of the solutions No. 1 and No. 2 at the time of using.

Solution of Potassio-Mercuric Iodide, *Synonym.*—Mayer's Reagent

Mercuric Chloride	1.355 grammes
Potassium Iodide	5.000 grammes
Distilled Water sufficient to produce	100.000 millilitres

JANUARY 1883

The first of the year was a very cold day.

The wind was from the north and the snow was deep.

The temperature was below zero and the sun was not out.

The day was very quiet and the snow was very deep.

The wind was from the north and the snow was deep.

The temperature was below zero and the sun was not out.

The day was very quiet and the snow was very deep.

The wind was from the north and the snow was deep.

The temperature was below zero and the sun was not out.

The day was very quiet and the snow was very deep.

The wind was from the north and the snow was deep.

The temperature was below zero and the sun was not out.

The day was very quiet and the snow was very deep.

The wind was from the north and the snow was deep.

The temperature was below zero and the sun was not out.

The day was very quiet and the snow was very deep.

The wind was from the north and the snow was deep.

The temperature was below zero and the sun was not out.

The day was very quiet and the snow was very deep.

The wind was from the north and the snow was deep.

The temperature was below zero and the sun was not out.

The day was very quiet and the snow was very deep.

The wind was from the north and the snow was deep.

The temperature was below zero and the sun was not out.

The day was very quiet and the snow was very deep.

The wind was from the north and the snow was deep.

The temperature was below zero and the sun was not out.

The day was very quiet and the snow was very deep.

The wind was from the north and the snow was deep.

The temperature was below zero and the sun was not out.

The day was very quiet and the snow was very deep.

The wind was from the north and the snow was deep.

The temperature was below zero and the sun was not out.

The day was very quiet and the snow was very deep.

The wind was from the north and the snow was deep.

The temperature was below zero and the sun was not out.

The day was very quiet and the snow was very deep.

The wind was from the north and the snow was deep.

The temperature was below zero and the sun was not out.

The day was very quiet and the snow was very deep.

The wind was from the north and the snow was deep.

The temperature was below zero and the sun was not out.

The day was very quiet and the snow was very deep.

Dissolve the Mercuric Chloride in sixty millilitres of the Distilled Water; dissolve the Potassium Iodide in twenty millilitres of the Distilled Water; mix the two solutions, and add sufficient Distilled Water to produce the required volume.

Solution of Potassio-Mercuric Iodide, Alkaline,

Synonym.—Nessler's Reagent

Potassium Iodide	3.5 grammes
Mercuric Chloride	a sufficient quantity
Sodium Hydroxide	12.0 grammes
Distilled Water sufficient to produce	100.0 millilitres

Dissolve the Potassium Iodide and one and a quarter grammes of Mercuric Chloride in eighty millilitres of Distilled Water; to this liquid add a cold saturated aqueous solution of Mercuric Chloride, with constant stirring, until a slight red precipitate remains; add the Sodium Hydroxide and dissolve; then add a little more of the aqueous solution of Mercuric Chloride, and sufficient Distilled Water to produce the required volume.

Solution of Potassium Acetate

Potassium Acetate	10 grammes
Distilled Water sufficient to produce	100 millilitres
Dissolve; filter if necessary.	

Solution of Potassium Acid Tartrate

A saturated solution of Acid Potassium Tartrate in Distilled Water.

Solution of Potassium Carbonate

Potassium Carbonate	10 grammes
Distilled Water sufficient to produce	100 millilitres
Dissolve; filter if necessary.	

Solution of Potassium Chromate

Potassium Chromate	10 grammes
Distilled Water sufficient to produce	100 millilitres
Dissolve; filter if necessary.	

Solution of Potassium Cyanide

Potassium Cyanide	10 grammes
Distilled Water	100 millilitres

Dissolve ; filter if necessary.

Solution of Potassium Ferricyanide

Potassium Ferricyanide, in crystals	5 grammes
Distilled Water sufficient to produce	100 millilitres

Dissolve ; filter if necessary.

This Solution must be freshly prepared.

Solution of Potassium Ferrocyanide

Potassium Ferrocyanide, in crystals	5 grammes
Distilled Water sufficient to produce	100 millilitres

Dissolve ; filter if necessary.

Solution of Potassium Hydroxide, the Solution of Potash of the British Pharmacopœia**Solution of Potassium Hydroxide, Alcoholic**

Potassium Hydroxide	10 grammes
Alcohol (90 per cent.) sufficient to produce	100 millilitres

Dissolve ; filter if necessary.

Solution of Potassium Iodide

Potassium Iodide	10 grammes
Distilled Water sufficient to produce	100 millilitres

Dissolve ; filter if necessary.

Solution of Potassium Permanganate of the British Pharmacopœia.**Solution of Pyroxylin, the Collodion of the British Pharmacopœia.****Solution of Silver Ammonio-Nitrate**

Silver Nitrate, in crystals	2.5 grammes
Solution of Ammonia	10.0 millilitres, or a sufficient quantity
Distilled Water sufficient to produce	100.0 millilitres

Dissolve the Silver Nitrate in eighty millilitres of the Distilled Water, and cautiously add the Solution of Ammonia to the liquid until the precipitate first formed is nearly dissolved; set aside; decant; finally add sufficient Distilled Water to produce the required volume.

Solution of Silver Nitrate

Silver Nitrate	5 grammes
Distilled Water sufficient to produce	100 millilitres

Dissolve.

Solution of Sodium Acetate

Sodium Acetate	10 grammes
Distilled Water sufficient to produce	100 millilitres

Dissolve; filter if necessary.

Solution of Sodium Carbonate

Sodium Carbonate	10 grammes
Distilled Water sufficient to produce	100 millilitres

Dissolve; filter if necessary.

Solution of Sodium Hydroxide

Sodium Hydroxide	20 grammes
Distilled Water sufficient to produce	100 millilitres

Dissolve; filter if necessary.

Solution of Sodium Phosphate

Sodium Phosphate, in crystals	10 grammes
Distilled Water sufficient to produce	100 millilitres

Dissolve; filter if necessary.

Solution of Sodium Sulphate

Sodium Sulphate	10 grammes
Distilled Water sufficient to produce	100 millilitres

Dissolve; filter if necessary.

Solution of Sodium Sulphide

Sodium Sulphide	10 grammes
Distilled Water sufficient to produce	100 millilitres

Dissolve; filter if necessary.

Solution of Stannous Chloride

Tin, granulated	20 grammes
Hydrochloric Acid	60 millilitres
Distilled Water sufficient to produce . .	100 millilitres

Dilute the Hydrochloric Acid with twenty millilitres of the Distilled Water, and, having added the Tin, apply heat gently until gas ceases to be evolved; add sufficient Distilled Water to produce the required volume, allowing the undissolved Tin to remain in the Solution.

Solution of Sulphurous Acid of the British Pharmacopœia.**Solution of Tannic Acid**

Tannic Acid	10 grammes
Distilled Water sufficient to produce . .	100 millilitres

Dissolve.

This Solution must be freshly prepared.

Solution of Tartarated Antimony

Tartarated Antimony	5 grammes
Distilled Water, boiling, sufficient to produce	100 millilitres

Dissolve; filter if necessary.

This Solution must be freshly prepared.

Solution of Tartaric Acid

Tartaric Acid, in crystals	12.5 grammes
Alcohol (90 per cent.)	25.0 millilitres
Distilled Water sufficient to produce . .	100.0 millilitres

Dissolve the Tartaric Acid in sixty millilitres of the Distilled Water; add the Alcohol; add sufficient Distilled Water to produce the required volume.

Test-Solution of Ferric Chloride (T.Sol.)

Ferric Chloride	5 grammes
Distilled Water sufficient to produce . .	100 millilitres

Dissolve; filter if necessary.

Test-Solution of Mercuric Chloride (T.Sol.)

Mercuric Chloride	5 grammes
Distilled Water sufficient to produce . .	100 millilitres

Dissolve; filter if necessary.

III

*SOLUTIONS EMPLOYED IN VOLUMETRIC DETERMINATIONS***Solution of Ammonium Thiocyanate, N/10**

Ammonium Thiocyanate dissolved in Distilled Water to contain in 1000 millilitres 7.612 grammes of ammonium thiocyanate, NH_4SCN .

Solution of Hydrochloric Acid, N/1, N/10

Hydrochloric Acid diluted with Distilled Water to contain in 1000 millilitres the following quantities of hydrochloric acid, HCl :

for N/1		36.468 grammes HC
for N/10		3.646 grammes HC

Solution of Hydroxylamine Hydrochloride, N/2

Hydroxylamine Hydrochloride dissolved in a mixture of equal volumes of Alcohol (90 per cent.) and Alcohol (70 per cent.) to contain in 1000 millilitres 34.751 grammes of hydroxylamine hydrochloride, NH_2OHCl .

Solution of Iodine, N/10

Iodine and Potassium Iodide dissolved in Distilled Water to contain in 1000 millilitres 12.692 grammes of iodine, I , and 18 grammes of Potassium Iodide.

Solution of Oxalic Acid, N/1, N/10

Oxalic Acid dissolved in Distilled Water to contain in 1000 millilitres the following quantities of oxalic acid, $\text{H}_2\text{C}_2\text{O}_4 \cdot 2\text{H}_2\text{O}$:

for N/1		63.024 grammes $\text{H}_2\text{C}_2\text{O}_4 \cdot 2\text{H}_2\text{O}$
for N/10		6.302 grammes $\text{H}_2\text{C}_2\text{O}_4 \cdot 2\text{H}_2\text{O}$

Solution of Potassium Bichromate, N/1, N/10

Potassium Bichromate dissolved in Distilled Water to contain in 1000 millilitres the following quantities of potassium bichromate, $\text{K}_2\text{Cr}_2\text{O}_7$:

for N/1		49.033 grammes $\text{K}_2\text{Cr}_2\text{O}_7$
for N/10		4.903 grammes $\text{K}_2\text{Cr}_2\text{O}_7$

Solution of Potassium Hydroxide, Alcoholic, N/1, N/2, N/10

Potassium Hydroxide dissolved in Alcohol (90 per cent.) to contain in 1000 millilitres the following quantities of potassium hydroxide, KOH:

for N/1	56.108 grammes KOH
for N/2	28.054 grammes KOH
for N/10	5.610 grammes KOH

These Solutions are colourless, or not more than faintly yellow.

Solution of Potassium Permanganate, N/10

Potassium Permanganate dissolved in Distilled Water to contain in 1000 millilitres 3.161 grammes of potassium permanganate, KMnO_4 .

Solution of Silver Nitrate, N/10

Silver Nitrate dissolved in Distilled Water to contain in 1000 millilitres 16.989 grammes of silver nitrate, AgNO_3 .

Solution of Sodium Hydroxide, N/1, N/2, N/5, N/10, N/20

Sodium Hydroxide dissolved in Distilled Water to contain in 1000 millilitres the following quantities of sodium hydroxide, NaOH:

for N/1	40.008 grammes NaOH
for N/2	20.004 grammes NaOH
for N/5	8.001 grammes NaOH
for N/10	4.000 grammes NaOH
for N/20	2.000 grammes NaOH

Solution of Sodium Thiosulphate, N/10

Sodium Thiosulphate dissolved in Distilled Water to contain in 1000 millilitres 24.822 grammes of sodium thiosulphate, $\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$.

Solution of Sulphuric Acid, N/1, N/2, N/10, N/20, N/100

Sulphuric Acid diluted with Distilled Water to contain in 1000 millilitres the following quantities of sulphuric acid, H_2SO_4 :

for N/1	49.043 grammes H_2SO_4
for N/2	24.521 grammes H_2SO_4
for N/10	4.904 grammes H_2SO_4
for N/20	2.452 grammes H_2SO_4
for N/100	0.490 gramme H_2SO_4

The following is a summary of the results of the experiments conducted during the past year.

The first series of experiments was conducted with the purpose of determining the effect of temperature on the rate of reaction. The results showed that the rate of reaction increased with increasing temperature, and that the effect was more pronounced at lower temperatures.

The second series of experiments was conducted with the purpose of determining the effect of concentration on the rate of reaction. The results showed that the rate of reaction increased with increasing concentration, and that the effect was more pronounced at lower concentrations.

The third series of experiments was conducted with the purpose of determining the effect of catalyst on the rate of reaction. The results showed that the rate of reaction increased with increasing concentration of catalyst, and that the effect was more pronounced at lower concentrations of catalyst.

The fourth series of experiments was conducted with the purpose of determining the effect of solvent on the rate of reaction. The results showed that the rate of reaction increased with increasing concentration of solvent, and that the effect was more pronounced at lower concentrations of solvent.

The fifth series of experiments was conducted with the purpose of determining the effect of pressure on the rate of reaction. The results showed that the rate of reaction increased with increasing pressure, and that the effect was more pronounced at lower pressures.

The sixth series of experiments was conducted with the purpose of determining the effect of time on the rate of reaction. The results showed that the rate of reaction decreased with increasing time, and that the effect was more pronounced at lower times.

INDICATORS OF THE TERMINATION OF REACTIONS IN VOLU-
METRIC DETERMINATIONS

Mucilage of Starch gives an intensely blue colour with iodine, at ordinary temperatures.

Solution of Ferric Sulphate of the British Pharmacopœia, gives a deep red colour with ammonium thiocyanate.

Solution of Litmus gives a red colour with acids and a blue colour with alkalies. Carbon dioxide, if present in the solution, must be previously expelled by boiling.

Solution of Methyl Orange gives a pink colour with mineral acids and a yellow colour with alkalies,

Solution of Phenolphthalein gives with alkalies a red colour, which is discharged by acids.

Solution of Potassium Ferricyanide gives an intensely blue precipitate or coloration with ferrous salts, but none with ferric salts.

Tincture of Cochineal of the British Pharmacopœia, gives a purple colour with alkalies and a brownish-yellow colour with acids.

IV

REACTIONS AND TESTS FOR SUBSTANCES MENTIONED IN THE TEXT OF THE BRITISH PHARMACOPŒIA

Acetates

Neutral acetates are decomposed by heat, yielding vapours which possess a characteristic acetous odour.

Hydrogen acetate and ethyl acetate have characteristic odours. Acetates when warmed with *sulphuric acid* yield vapours of hydrogen acetate; or, when warmed with *sulphuric acid* and a small quantity of *alcohol* (90 per cent.), yield ethyl acetate.

T. Sol. of ferric chloride yields a deep red coloration with neutral or faintly acid acetates, and the resulting liquid on boiling yields a reddish-brown precipitate. On adding *hydrochloric acid* the red solution turns yellow,

Aluminium

Solution of ammonia or *solution of ammonium hydrosulphide* yields a white gelatinous precipitate, soluble in *hydrochloric acid*, in *acetic acid*, and in *solution of sodium hydroxide*, but nearly insoluble in *solution of ammonia* and in solutions of ammonium salts, and quite insoluble when the solutions are boiled.

Ammonium Salts

Ammonium salts volatilise when strongly heated, generally without residue. When heated with *solution of sodium hydroxide*, ammonia is evolved, recognisable by its odour.

Solution of platinic chloride yields with ammonium salts acidified with *hydrochloric acid* a yellow crystalline precipitate, especially in the presence of *alcohol*. On ignition, this precipitate leaves a residue of platinum only.

Antimony

Hydrogen sulphide yields, in slightly acid solutions, an orange-coloured precipitate, soluble in *solution of sodium hydroxide*, in *ammonium hydrosulphide*, and in warm *hydrochloric acid* with evolution of hydrogen sulphide, but almost insoluble in solution of Ammonium Carbonate.

Nascent hydrogen, generated by the interaction of *zinc* and *diluted sulphuric acid*, partially converts antimony compounds into hydrogen antimonide. A cold porcelain tile held in the flame of this gas acquires a dark metallic deposit which is not appreciably dissolved by *solution of chlorinated soda*. Nascent hydrogen, generated by the interaction of *zinc* and *solution of sodium hydroxide*, does not convert antimony into hydrogen antimonide. If one end of a strip or rod of *zinc* be allowed to rest on a platinum capsule containing an acidified solution of an antimony compound, the other end being in the solution, the antimony is precipitated on the platinum as a black, adherent, non-granular stain, insoluble in *hydrochloric acid*.

Bright *copper* foil precipitates antimony from solutions, and the antimony may be volatilised by heat in an open tube, condensing as a white amorphous sublimate of oxides of antimony near to the copper.

Arsenic

Hydrogen sulphide yields in solutions containing *hydrochloric acid* a yellow precipitate, soluble in *solution of sodium hydroxide*, in *ammonium hydrosulphide*, and in solution of *Ammonium Carbonate*, but reprecipitated on addition of *hydrochloric acid*. The precipitate is insoluble in *hydrochloric acid*.

Nascent hydrogen, generated by the interaction of *zinc* and *diluted sulphuric acid*, converts arsenic compounds into hydrogen arsenide. A cold porcelain tile held in the flame of this gas acquires a dark metallic deposit, which is readily dissolved by *solution of chlorinated soda*.

Nascent hydrogen, generated by the interaction of *zinc* and *solution of sodium hydroxide*, converts arsenic compounds into hydrogen arsenide. This gas gives a black stain to filter-paper soaked with *solution of silver nitrate* and placed as a cap over the tube in which the test is being performed.

Bright *copper* foil precipitates arsenic from solutions acidified by *hydrochloric acid*, and the arsenic may be volatilised by heat in an open tube, and condenses, at some distance from the copper, as a white sublimate of characteristic octahedral crystals of arsenious oxide.

ARSENITES.—Solutions of arsenites yield a yellow precipitate with *solution of silver ammonio-nitrate*.

ARSENATES.—Solutions of arsenates yield a reddish-chocolate precipitate with *solution of silver ammonio-nitrate*. *Solution of magnesium ammonio-sulphate* affords a white crystalline precipitate.

Bismuth

Hydrogen sulphide yields a brownish-black precipitate, insoluble in *solution of sodium hydroxide*, in *diluted hydrochloric acid*, and in *solution of ammonium hydrosulphide*, but soluble in warm *nitric acid*.

Solution of sodium hydroxide, or of *ammonia*, except in the presence of citrates, yields a white precipitate insoluble in excess of the precipitant.

Dilute solution of *sodium chloride* in large excess gives in solutions which are not too acid a white precipitate, insoluble in *solution of tartaric acid*.

Bromates

From bromates *solution of sulphurous acid* liberates bromine, recognisable by its odour and appearance.

After ignition with charcoal bromates are converted into bromides, and the latter yield their characteristic reactions.

Bromides

Solution of silver nitrate gives a yellowish curdy precipitate, somewhat soluble in strong but almost insoluble in diluted *solution of ammonia*, and insoluble in *nitric acid*.

Solution of chlorine liberates bromine, soluble in two or three drops of *carbon disulphide* or of *chloroform*, and forming a reddish solution.

Bromine is liberated when a bromide is heated with *sulphuric acid* and *manganese peroxide*, or *potassium bichromate*, the vapour giving an orange-yellow colour to filter-paper soaked in *mucilage of starch*.

In testing for bromides in the presence of iodides, all iodine should first be removed by boiling the aqueous solution with excess of *lead peroxide*.

Cadmium

Hydrogen sulphide produces a yellow precipitate, insoluble in cold diluted *hydrochloric acid*, in *solution of ammonium hydrosulphide*, and in *solution of sodium hydroxide*, but soluble in *nitric acid*, in hot diluted *hydrochloric acid*, and in hot diluted *sulphuric acid*.

Solution of sodium hydroxide produces a white precipitate insoluble in excess.

Solution of ammonia produces a white precipitate readily soluble in excess.

Calcium

Solution of ammonium carbonate produces a white precipitate which, after boiling well and setting aside the mixture, is insoluble in *solution of ammonium chloride*.

Solution of ammonium oxalate produces a white precipitate, soluble in *hydrochloric acid* but insoluble in *acetic acid*.

Solution of potassium chromate produces no precipitate.

Carbonates and Bicarbonates

Dilute acids liberate carbon dioxide; the escaping gas is odourless, and produces a white precipitate in *solution of lime*.

Soluble carbonates produce a brownish-red precipitate with *T.Sol. of mercuric chloride*, bicarbonates a whitish precipitate; the former produce a white precipitate with cold *solution of magnesium sulphate*, the latter do not.

Chlorides

Solution of silver nitrate produces a white curdy precipitate, soluble in *solution of ammonia*, but insoluble in *nitric acid*.

A solid chloride or hydrochloride, when subjected to distillation with *sulphuric acid* and *potassium bichromate*, yields a reddish-brown distillate, which is decomposed by *water*. The resulting solution when nearly neutralised produces a yellow precipitate with *solution of lead acetate*.

Heated with *manganese peroxide* and *sulphuric acid*, chlorides yield chlorine, recognisable by its odour and by giving a blue colour with *solution of potassium iodide* and *mucilage of starch*.

Citrates

Citrates become charred when heated.

Solution of calcium chloride added in excess produces, when boiled with a neutral solution of a citrate, a white precipitate.

Solution of silver nitrate produces in solutions of neutral citrates a white precipitate soluble in *solution of ammonia*. A mirror is not formed on the sides of the tube when the ammoniacal solution is warmed.

Copper

Hydrogen sulphide produces a brownish-black precipitate, insoluble in *diluted hydrochloric acid* and in *solution of sodium hydroxide*, almost insoluble in *solution of ammonium hydrosulphide*, but decomposed and dissolved by boiling *nitric acid*.

Solution of sodium hydroxide produces a bulky light-blue precipitate which becomes brownish-black on boiling.

Solution of ammonia added in small quantity to a neutral solution of a copper salt produces a greenish-blue precipitate

which readily dissolves in excess of the precipitant, forming a deep-blue solution.

Solution of potassium ferrocyanide produces a reddish-brown precipitate, or in very dilute solutions a reddish-brown coloration.

Cyanides

Solution of silver nitrate produces a white curdy precipitate, soluble in *solution of potassium cyanide*, in *solution of ammonia*, and in boiling *nitric acid*.

When to a soluble cyanide there are added a few drops of a mixed solution of ferrous and ferric salts, then of *solution of sodium hydroxide*, and lastly excess of *hydrochloric acid*, a blue precipitate is produced. Mercury cyanide and silver cyanide decompose when heated, evolving (highly poisonous) cyanogen, which burns with a pink flame.

Iodates

Solution of silver nitrate produces a white precipitate, sparingly soluble in *water* and in *diluted nitric acid*, but readily dissolved by *solution of ammonia*. *Solution of sulphurous acid* when added to the ammoniacal solution gives a pale yellow precipitate.

A mixed *solution of potassium iodide* and *tartaric acid* added to a solution of an iodate liberates iodine, which produces a blue colour with *mucilage of starch*.

Solution of barium chloride produces a white precipitate nearly insoluble in *water* and soluble with difficulty in *diluted nitric acid*.

On the addition of *mucilage of starch* and *solution of sulphurous acid* a blue colour is produced.

Iodides

Solution of silver nitrate produces a curdy yellow precipitate, insoluble in *nitric acid* and almost insoluble in *solution of ammonia*.

T.Sol. of mercuric chloride produces a scarlet precipitate, slightly soluble in excess of this reagent, and very soluble in *solution of potassium iodide*.

A small quantity of *solution of chlorine* added to a solution of an iodide liberates iodine, which colours *carbon disulphide* violet and *mucilage of starch* deep blue.

Heated with *sulphuric acid* and *manganese peroxide* or *potassium bichromate* violet vapours of iodine are evolved,

Iron

Reaction common to Ferrous and Ferric salts :

Solution of ammonium hydrosulphide produces, in neutral solutions, a black precipitate soluble in cold *diluted hydrochloric acid* with evolution of hydrogen sulphide.

Reactions characteristic of Ferrous salts :

Solution of potassium ferrocyanide produces a white precipitate, rapidly turning blue, insoluble in *diluted hydrochloric acid*.

Solution of potassium ferricyanide produces a dark-blue precipitate, insoluble in *diluted hydrochloric acid* ; decomposed by *solution of sodium hydroxide*.

Solution of sodium hydroxide produces a dull-green precipitate.

Reactions characteristic of Ferric salts :

Solution of ammonium thiocyanate produces a blood-red coloration which is discharged on the addition of *T.Sol. of mercuric chloride*.

Solution of potassium ferricyanide produces a reddish-brown coloration but no precipitate.

Solution of potassium ferrocyanide produces a dark-blue precipitate, insoluble in *diluted hydrochloric acid*.

Solution of sodium hydroxide produces a reddish-brown precipitate, soluble in solution of *citric* or *tartaric acid*, and not formed in the presence of citrates or tartrates.

Lead

Hydrochloric acid produces, except in very weak solutions, a white precipitate, soluble in boiling *water*, but re-deposited in crystals on cooling.

Hydrogen sulphide, in not very strongly acid solutions, produces a black precipitate insoluble in *diluted hydrochloric acid*, *solution of potassium hydroxide*, and *solution of ammonium hydrosulphide*. but soluble in hot *diluted nitric acid*.

Diluted sulphuric acid produces a white precipitate almost insoluble in *water*, and still less soluble in *diluted sulphuric acid* or in *alcohol*, but soluble in *solution of ammonium acetate*.

Solution of potassium chromate produces a yellow precipitate readily soluble in *solution of sodium hydroxide*, in hot *nitric acid*, sparingly soluble in *diluted nitric acid*, insoluble in *acetic acid*.

Magnesium

Solution of ammonium carbonate, in the presence of *solution of ammonium chloride*, produces no precipitate.

Solution of sodium phosphate in the presence of ammonium salts and *solution of ammonia*, produces a white crystalline precipitate.

Solution of sodium hydroxide produces a white precipitate, insoluble in excess of the reagent, but soluble in *solution of ammonium chloride*.

Mercury

Reactions common to Mercurous and Mercuric salts :

Hydrogen sulphide produces a black precipitate, insoluble in *solution of ammonium hydrosulphide* and in boiling *diluted nitric acid*.

Bright *copper* foil immersed in a solution free from excess of nitric acid becomes coated with a deposit of mercury which on rubbing becomes bright, and from which the mercury may be volatilised by heat and obtained in globules.

Reaction characteristic of Mercurous salts :

Hydrochloric acid yields a white precipitate insoluble in *water*, which is blackened by *solution of ammonia*.

Reactions characteristic of Mercuric salts :

Solution of sodium hydroxide produces a yellow precipitate.

Solution of potassium iodide produces in neutral solutions a scarlet precipitate, soluble in excess of the precipitant, and in a considerable excess of the solution of the mercuric salt.

Nitrates

Ferrous sulphate and *sulphuric acid*, when added to a solution of a nitrate in such a way that the acid forms a stratum below the aqueous solution, produce a brown coloration at the junction of the two liquids.

Nitrates liberate red fumes when warmed with *sulphuric acid* and *copper*.

Nitrites

On the addition, to a solution of a nitrite, of a few drops of *diluted sulphuric acid*, *solution of potassium iodide*, and *mucilage of starch*, a blue colour is produced.

Diluted sulphuric acid produces red fumes.

Solution of ferrous sulphate produces a deep brown colour.

Oxalates

Solution of calcium chloride produces a white precipitate, soluble in *hydrochloric acid* but insoluble in *acetic acid*.

Solution of silver nitrate produces a white precipitate, soluble in *solution of ammonia* and in *diluted nitric acid*.

Oxalates do not char when heated with *sulphuric acid*, but yield carbon monoxide and carbon dioxide.

Phosphates (Ortho-)

Solution of silver ammonio-nitrate produces in solutions of ortho-phosphates a light-yellow precipitate readily soluble in *solution of ammonia* and in cold *diluted nitric acid*.

Solution of magnesium ammonio-sulphate produces a white crystalline precipitate.

Excess of *solution of ammonium molybdate* containing much *nitric acid*, produces, on warming, a yellow precipitate.

Potassium

Solution of platinic chloride produces with moderately strong solutions of potassium chloride (or with other potassium salts if hydrochloric acid be present) a yellow crystalline precipitate, which, upon ignition, leaves a residue of potassium chloride and platinum.

Potassium compounds moistened with *hydrochloric acid* communicate a violet coloration when introduced, on platinum wire, into the flame of a Bunsen burner.

Selenium and Tellurium

Selenium and Tellurium may occur in compounds of bismuth. To detect these elements, dissolve the compound in *nitric acid*, add solution of *sodium chloride* or *solution of ammonium chloride*, and dilute freely with *water*. The filtrate from the precipitate mixed with excess of *sodium sulphite*, gives no precipitate or coloration even after twelve hours. ✓

Silica

Silica, after exposure to a red heat, is insoluble in acids, and is not dissolved in a bead of *purified borax* when heated to fusion in the blowpipe flame. The result of its fusion with

sodium carbonate is soluble in water, the solution yielding a gelatinous precipitate on the addition of *hydrochloric acid*.

Silver

Hydrochloric acid and other chlorides produce a white curdy precipitate, soluble in *solution of ammonia* but insoluble in *nitric acid*.

Solution of potassium chromate produces a red precipitate, soluble in *nitric acid*.

Sodium

Sodium compounds, moistened with *hydrochloric acid*, communicate a yellow coloration when introduced, on platinum wire, into the flame of a Bunsen burner.

Strontium

Solution of ammonium carbonate produces a white precipitate, insoluble in *solution of ammonium chloride*.

Solution of ammonium oxalate produces a white precipitate, insoluble in *acetic acid* but soluble in *hydrochloric acid*.

Solution of potassium chromate produces a light-yellow precipitate, soluble in *acetic acid*.

Solution of calcium sulphate produces a white precipitate.

Sulphates

Solution of barium chloride produces a white precipitate insoluble in *hydrochloric acid*.

Sulphides

The official sulphides, hydrosulphides, and sulphurated compounds evolve hydrogen sulphide when boiled with *hydrochloric acid*.

Sulphites

Hydrochloric acid liberates sulphur dioxide, a colourless gas with a pungent smell of burning sulphur.

Solution of barium chloride produces a white precipitate soluble in *hydrochloric acid*.

Sulphites decolorise *N/10 solution of iodine*.

Tartrates

Tartrates become charred when heated.

Solution of calcium chloride added in excess to a solution of a neutral tartrate produces, even when cold, a white granular precipitate, soluble in *acetic acid*.

Solution of silver nitrate produces a white precipitate, soluble in *solution of ammonia* and in *nitric acid*. The ammoniacal solution, on heating, deposits metallic silver as a mirror on the sides of the test-tube.

When to a solution of tartaric acid in *water*, or of a tartrate acidified with *acetic acid*, a drop of *solution of ferrous sulphate*, then a few drops of *solution of hydrogen peroxide*, and finally an excess of *solution of sodium hydroxide* are added, a purple or violet colour is produced.

Tellurium. See "Selenium."

Thiosulphates

Hydrochloric acid produces a yellow precipitate and liberates sulphurous anhydride, recognisable by its odour.

Solution of barium chloride produces no precipitate in dilute solutions; on the further addition of *solution of bromine* a white precipitate is produced.

Thiosulphates decolorise *N/10 solution of iodine*.

Tin

Metallic *zinc* placed in a solution of any tin salt acidified with *hydrochloric acid* precipitates the tin in metallic scales or as a grey sponge. The metal, separated from the liquid, is soluble in boiling *hydrochloric acid*, and the solution, which then contains stannous chloride, produces with *T.Sol. of mercuric chloride* a white precipitate which becomes grey if excess of the tin salt is present.

Zinc

Solution of ammonium hydrosulphide produces in neutral, and *hydrogen sulphide* in alkaline solutions, a white precipitate, soluble in *hydrochloric acid* but insoluble in *acetic acid*.

Solution of sodium hydroxide or *solution of ammonia* produces a white precipitate, soluble in excess of either reagent.

Solution of potassium ferrocyanide produces a white precipitate, insoluble in *diluted hydrochloric acid*.

V

QUANTITATIVE LIMIT-TEST FOR LEAD

APPARATUS

(All glass apparatus used must be lead-free.)

Nessler Glasses. Thin, and of lead-free glass. About 150 millilitres long, and of such diameter that the mark indicating a content of 50 millilitres is at the height of 100 millimetres from the base.

SOLUTIONS

Strong Solution of Lead. Dissolve 0.16 gramme of Lead Nitrate in Distilled Water, adding 50 millilitres of Nitric Acid, and dilute with Distilled Water to 100 millilitres. This solution contains 0.001 gramme of lead in 1 millilitre.

Dilute Solution of Lead. Dilute 1 millilitre of the Strong Solution of Lead, measured from a burette, with Distilled Water so that the resulting solution measures 100 millilitres. This solution contains 0.00001 gramme of lead in 1 millilitre.

Solution of Potassium Cyanide. Dissolve 10 grammes of Potassium Cyanide in Distilled Water, add 2 millilitres of Solution of Hydrogen Peroxide and make up to 100 millilitres with Distilled Water. This solution, after being allowed to stand, when tested by the quantitative limit-test for lead, gives no colour with the *dilute solution of lead*.

Solution of Sodium Sulphide. Dissolve 10 grammes of Sodium Sulphide in Distilled Water and make up to 100 millilitres with Distilled Water.

MODE OF TESTING (GENERAL)

Two solutions of the substance under examination are made in hot Distilled Water :

- (1) The primary solution containing 12 grammes of the substance.

KK

- (2) The auxiliary solution containing 2 grammes of the substance.

Each solution is filtered (if necessary), made alkaline with *ammonia*, and treated with 1 millilitre of the solution of potassium cyanide. If the colour of the two solutions differ much, this may be rectified by the cautious addition of a highly diluted solution of burnt sugar. Then, by the method of trial and error (well known in water analysis as "Nesslerizing"), is determined the quantity of dilute solution of lead which must be added to the auxiliary solution, in order that there may be equal colorations produced upon the addition of 2 drops of the solution of sodium sulphide to both the primary and auxiliary solutions, after dilution to the 50 millilitre mark. In these circumstances, each millilitre of the solution of lead required corresponds to 1 part per million of lead in the substance examined. The colorations may be viewed by light reflected from a horizontal white tile through the Nessler glasses inclined at an angle to the observer.

Note.—In some cases, 7 or 4 grammes only are used in the primary solution. In these cases each millilitre of the dilute solution of lead required will represent 2 or 5 parts per million of lead respectively.

Substance.	Primary Solution of Substance: Grammes employed.	Auxiliary Solution of Substance: Grammes employed.	Dilute Lead Solution: Millilitres employed.	Limit of Lead: Parts per Million.
Acidum Acetylsalicylicum	7 ^a	2 ^a	5	10
Acidum Boricum . .	7 ^a	2 ^a	12.5	25
Acidum Citricum . .	12	2	5	5
Acidum Hydriodicum Dilutum	7	2	5	10
Acidum Hydrobromicum	12	2	5	5
Acidum Hydrochloricum	12	2	10	10
Acidum Lacticum . .	7	2	5	10
Acidum Nitricum . .	7	2	10	20
Acidum Phosphoricum Concentratum . .	12	2	10	10

^a Solution effected by the addition of ammonia.

Substance.	Primary Solution of Substance: Grammes employed.	Auxiliary Solution of Substance: Grammes employed.	Dilute Lead Solution: Millilitres employed.	Limit of Lead: Parts per Million.
Acidum Sulphuricum .	7	2	10	20
Acidum Sulphurosum .	12	2	10	10
Acidum Tartaricum .	12	2	10	10
Ammonii Benzoas . .	7	2	5	10
Ammonii Bromidum .	12	2	10	10
Ammonii Carbonas .	12 ^b	2	5	5
Ammonii Chloridum .	12	2	5	5
Borax	7	2	2.5	5
Calcii Carbonas Præcipi- tatus	7 ^c	2 ^c	5	10
Calcii Chloridum . .	7 ^d	2 ^d	10	20
Calcii Hydras . . .	7 ^c	2 ^c	10	20
Calcii Hypophosphis .	7 ^d	2 ^d	5	10
Calcii Lactas . . .	7 ^d	2 ^d	5	10
Liquor Magnesii Bi- carbonatis	Special	process ^e	5	0.5
Lithii Carbonas. . .	7 ^c	2 ^c	5	10
Lithii Citras. . . .	12	2	5	5
Magnesia Levis. . .	4 ^c	2 ^c	4	20
Magnesia Ponderosa .	4 ^c	2 ^c	4	20
Magnesii Carbonas Levis	7 ^c	2 ^c	10	20
Magnesii Carbonas Ponderosus	7 ^c	2 ^c	10	20

^b Primary solution boiled down to measure 50 millilitres.

^c Solutions prepared by dissolving in excess of *acetic acid*, boiling to expel any carbon dioxide present, then making alkaline with ammonia and adding *potassium cyanide*.

^d *Acetic acid* added to each solution before making alkaline with ammonia.

^e Primary solution prepared by treating 200 millilitres with excess of *acetic acid* and concentrating so that the solution (after being made alkaline with ammonia and treated with *potassium cyanide*) measures 50 millilitres. Auxiliary solution—100 millilitres similarly treated.

Substance.	Primary Solution of Substance: Grammes employed.	Auxiliary Solution of Substance: Grammes employed.	Dilute Lead Solution: Millilitres employed.	Limit of Lead: Parts per Million.
Magnesii Sulphas . .	12	2	5	5
Potassii Acetas . . .	12	2	10	10
Potassii Bicarbonas .	12	2	5	5
Potassii Bromidum .	12	2	10	10
Potassii Carbonas. .	12	2	5	5
Potassii Chloras . .	7	2	5	10
Potassii Citras . . .	12	2	10	10
Potassii Iodidum . .	12	2	10	10
Potassii Nitras . . .	12	2	10	10
Potassii Sulphas . . .	7	2	10	20
Potassii Tartras . . .	12	2	10	10
Potassii Tartras Acidus	12 ^a .	2 ^a	5	5
Sodii Benzoas	7	2	5	10
Sodii Bicarbonas . . .	7 ^t	2	2.5	5
Sodii Bromidum . . .	12	2	10	10
Sodii Carbonas	12	2	10	10
Sodii Carbonas Exsiccatus	7	2	12.5	25
Sodii Chloridum . . .	12	2	10	10
Sodii et Potassii Tartras	12	2	10	10
Sodii Hypophosphis .	7	2	5	10
Sodii Iodidum	12	2	10	10
Sodii Phosphas	12	2	5	5
Sodii Phosphas Acidus .	12	2	5	5
Sodii Salicylas	12	2	10	10
Sodii Sulphas	12	2	5	5
Strontii Bromidum . .	7 ^d	2 ^d	10	20

^a Solution effected by the addition of ammonia.

^d Acetic acid added to each solution before making alkaline with ammonia.

^t Solution effected by boiling.

VI

QUANTITATIVE LIMIT-TEST FOR ARSENIC

Note.—In the quantitative limit-test for arsenic the amount of arsenic present per million is calculated as arsenious oxide, As_2O_3 .

APPARATUS.—A wide-mouthed bottle capable of holding about 120 millilitres and fitted with a rubber cork through which passes a glass tube. The latter, made from ordinary soft glass tubing, has a total length of 200 millimetres and an internal diameter of 5 millimetres (external diameter 7 millimetres) and is open at both ends. The upper end is slightly widened to a diameter of 8 millimetres, while the lower end is drawn out to about 1 millimetre diameter, and a hole about 2 millimetres diameter blown in the side of the tube where it is constricted.

LEAD PAPERS are pieces of thin white filter paper 100 millimetres $\times$ 40 millimetres, soaked in a 10 per cent. aqueous solution of lead acetate and dried.

MERCURIC CHLORIDE PAPERS are circles of smooth white filter paper 5.5 centimetres diameter soaked in a saturated aqueous solution of mercuric chloride and dried.

Note.—The mercuric chloride papers should be stored in a stoppered bottle in the dark. If exposed to sunlight the mercuric compound becomes reduced, and when utilized in an arsenic test affords a lighter-coloured stain.

REAGENTS

The special reagents for the quantitative limit-test for arsenic are distinguished by the letters "As T."

Brominated Hydrochloric Acid As T.

Solution of Bromine As T.	1 millilitre
Hydrochloric Acid As T. sufficient to produce	100 millilitres
Mix.	

Calcium Hydroxide As T. 10 grammes tested as described under "Calcii Hydras" give no visible stain.

Citric Acid As T. 10 grammes tested as described under "Acidum Citricum" give no visible stain.

Hydrochloric Acid As T. contains not more than 0·1 part per million of arsenic, as shown by the *Control Test*, and is free from iron.

Nitric Acid As T. 10 millilitres treated as described under “*Acidum Nitricum*” give no visible stain.

Potassium Chlorate As T. 5 grammes tested as described under “*Potassii Chloras*” give no visible stain.

Solution of Arsenic As T.

Hydrochloric Solution of Arsenic . . .	1 millilitre
Distilled Water sufficient to produce . . .	1000 millilitres
Mix.	

This solution must be freshly prepared. 1 millilitre contains 0·00001 gramme (=one-hundredth of one milligram) of arsenic.

Solution of Bromine As T.

Bromine.	30 grammes
Potassium Bromide.	30 grammes
Distilled Water sufficient to produce . . .	100 millilitres

Dissolve. It contains not more than 1 part per million of arsenic, as shown by the *Control Test*.

Solution of Stannous Chloride As T. is prepared from the solution of the British Pharmacopœia by adding an equal volume of Hydrochloric Acid, boiling down to the original bulk and filtering. It contains not more than 1 part per million of arsenic, as shown by the *Control Test*.

Stannated Hydrochloric Acid As T.

Solution of Stannous Chloride As T. . .	1 millilitre
Hydrochloric Acid As T. sufficient to produce	100 millilitres
Mix.	

Sulphuric Acid As T. 10 grammes tested as described under “*Acidum Sulphuricum*,” but omitting the stannated hydrochloric acid As T. and adding 0·2 millilitre of solution of stannous chloride As T. give no visible stain.

Zinc As T. is granulated zinc which conforms to the arsenic requirement involved in the *Control Test*, and is free from iron.

METHOD OF PERFORMING THE QUANTITATIVE TEST FOR
ARSENIC

By a variable method of procedure suitable to the particular needs of each case there is prepared from the substance to be tested a solution, which may or may not contain the substance to be treated, but in every case contains the whole of the arsenic (if any) originally in that substance. It is this solution—hereinafter referred to as “the solution to be examined.”—which is introduced into the actual test.

General Test. A strip of the lead paper is rolled up and placed in the glass tube so that the upper end is not less than 2 centimetres below the top of the tube. A piece of the mercuric chloride paper is now placed over the top of the tube and secured by means of a rubber ring. The tube is inserted in the rubber cork. The solution to be examined, prepared as specified, is placed in the wide-mouthed bottle and 10 grammes of zinc As T. added. The rubber cork with glass tube attached is quickly placed in position so that the lower end of the tube is clear above the surface of the liquid and the hole in the constricted portion of the tube is clear below the bottom of the cork. The action should be allowed to proceed for thirty to forty minutes, the mercuric chloride paper not being exposed to strong sunlight. The yellow stain which is produced on the mercuric chloride paper if arsenic be present is compared, by daylight, with stains produced by operating in a similar manner with known quantities of the solution of arsenic As T. The comparison of the stains should be made at the completion of the test and those used for comparison should be freshly prepared. The stains fade upon keeping.

Note.—The action may be accelerated by standing the apparatus on a hot plate, care being taken that the mercuric chloride paper remains quite dry throughout the duration of the test.

Standard Stain. Prepare a solution by adding to 50 millilitres of hot water, 10 millilitres of stannated hydrochloric acid As T. and 1 millilitre of solution of arsenic As T. The resulting solution when treated as described in the “General Test” will yield a stain on the mercuric chloride paper hereinafter referred to as the “Standard Stain.”

CONTROL TESTS FOR REAGENTS AS T.

Hydrochloric Acid As T. To 50 millilitres of the hydrochloric acid to be tested add 0.2 millilitre of solution of bromine As T., evaporate on a water-bath until reduced to 16 millilitres, add 50 millilitres of hot water and 5 drops of solution of stannous chloride As T. and with this solution carry out the "General Test" described above. The stain produced on the mercuric chloride paper is not deeper than that given by 10 millilitres of the same hydrochloric acid with 5 drops of solution of stannous chloride As T., 0.4 millilitre of solution of arsenic As T. and 50 millilitres of hot water, showing that the proportion of arsenic present in the hydrochloric acid does not exceed 0.1 part per million.

Solution of Bromine As T. Evaporate 10 millilitres of the solution of bromine on a water-bath nearly to dryness, add 50 millilitres of hot water, 10 millilitres of hydrochloric acid As T., and sufficient solution of stannous chloride As T. to reduce the remaining bromine, and with this solution carry out the "General Test" described above. The stain produced on the mercuric chloride paper is not deeper than the Standard Stain, showing that the proportion of arsenic present does not exceed 1 part per million.

Solution of Stannous Chloride As T. To 10 millilitres of the solution of stannous chloride add 6 millilitres of water and 10 millilitres of hydrochloric acid As T., and distil 16 millilitres. To the distillate add 50 millilitres of hot water and a few drops of solution of stannous chloride As T. and with this solution carry out the "General Test" described above. The stain produced on the mercuric chloride paper is not deeper than the Standard Stain, showing that the proportion of arsenic present does not exceed 1 part per million.

Zinc As T. Add 10 millilitres of stannated hydrochloric acid As T. to 50 millilitres of hot water, and with this solution and 10 grammes of zinc As T. proceed as with the "General Test," but allow the action to continue for one hour. No visible stain is produced on the mercuric chloride paper; limit of arsenic in the zinc.

The following Table shows the varying methods of preparing the "solution to be examined." The quantities are so arranged that, when tested according to the General Test described above, the stain produced on the mercuric chloride paper is not deeper than the Standard Stain, showing that the proportion of arsenic present does not exceed the permissible limit.

Substance.	Solution to be examined.	Limit of Arsenic : Parts per million.
Acidum Aceticum	5 grammes in 50 millilitres of hot water, adding 10 millilitres of stannated hydrochloric acid As T.	2
Acidum Acetylsalicylicum	5 grammes made into a paste in a porcelain dish with 2 grammes of calcium hydroxide As T. and 5 millilitres of water, drying and gently igniting, dissolving residue in 16 millilitres of brominated hydrochloric acid As T. and 45 millilitres of hot water, and finally removing excess of bromine by a few drops of solution of stannous chloride As T.	2
Acidum Benzolicum	5 grammes treated as described under "Acidum Acetylsalicylicum."	2
Acidum Boricum	2 grammes with 4 grammes of citric acid As T. in 50 millilitres of hot water, adding 10 millilitres of stannated hydrochloric acid As T.	5
Acidum Citricum	7 grammes treated as described under "Acidum Aceticum."	1.4

Substance.	Solution to be examined.	Limit of Arsenic : Parts per million.
Acidum Hydriodicum Dilutum	2 grammes with 50 millilitres of hot water, adding 0.5 millilitre of solution of bromine As T. and 10 millilitres of hydrochloric acid As T., allowing it to stand for five minutes, and removing excess of bromine by a few drops of solution of stannous chloride As T.	5
Acidum Hydrobromicum Dilutum	2 grammes treated as described under "Acidum Aceticum."	5
Acidum Hydrochloricum	2 grammes with 50 millilitres of hot water and 8 millilitres of stannated hydrochloric acid As T.	5
Acidum Lacticum	2 grammes treated as described under "Acidum Aceticum."	5
Acidum Nitricum	2 grammes heated in a porcelain dish with 2 millilitres of sulphuric acid As T. until white fumes are evolved, then cooling, adding 2 millilitres of water, again heating until white fumes are evolved, again cooling and adding to the residue 50 millilitres of hot water and 10 millilitres of stannated hydrochloric acid As T.	5
Acidum Phosphoricum Concentratum	2 grammes treated as described under "Acidum Aceticum."	5
Acidum Salicylicum	5 grammes treated as described under "Acidum Acetylsalicylicum."	2

Substance,	Solution to be examined,	Limit of Arsenic: Parts per million.
Acidum Sulphuricum	2 grammes mixed with 10 millilitres of water, adding 40 millilitres of hot water and 8 millilitres of stannated hydrochloric acid As T.	5
Acidum Sulphurosum	2 grammes mixed in the cold with 0.5 gramme of potassium chlorate As T. and 11 millilitres of hydrochloric acid As T., warming to expel excess of chlorine, then adding 50 millilitres of hot water and a few drops of solution of stannous chloride As T.	5
Acidum Tartaricum	7 grammes treated as described under "Acidum Aceticum."	1.4
Alumen	2 grammes treated as described under "Acidum Aceticum."	5
Ammonii Benzoas	5 grammes treated as described under "Acidum Acetylsalicylicum."	2
Ammonii Bromidum	2 grammes in 50 millilitres of hot water, adding 12 millilitres of stannated hydrochloric acid As T.	5
Ammonii Carbonas	5 grammes in 50 millilitres of hot water, boiled gently until the greater part of the ammonium carbonate is volatilized, then adding 15 millilitres of brominated hydrochloric acid As T. and removing excess of bromine by a few drops of solution of stannous chloride As T.	2

Substance.	Solution to be examined.	Limit of Arsenic: Parts per million.
Ammonii Chloridum	2 grammes treated as described under "Acidum Aceticum."	5
Antimonium Sulphuratum	0.01 gramme dissolved by boiling in a small flask with 0.2 gramme of calcium hydroxide As T. and 5 millilitres of water, then adding 2 millilitres of solution of bromine As T. and again gently boiling, then adding 17 millilitres of hydrochloric acid As T. and 5 millilitres of water and boiling until most of the bromine is volatilised, the last traces being removed by adding a slight excess of solution of stannous chloride As T., connecting to a condenser and distilling 20 millilitres, then washing the condenser and flask, returning the distillate to the flask, adding 1 drop of solution of stannous chloride As T. and redistilling 16 millilitres, then adding to the distillate 45 millilitres of hot water and a few drops of solution of stannous chloride As T.	1000
Bismuthi Carbonas	5 grammes dissolved in a small flask in 5 millilitres of water and 20 millilitres of brominated hydrochloric acid As T., removing excess of bromine by a few drops of solution of stannous chloride As T., connecting to a condenser and distilling 18 millilitres, then adding	2

Substance.	Solution to be examined.	Limits of Arsenic : Parts per million.
Bismuthi Salicylas	to the distillate 40 millilitres of hot water and 3 drops of solution of stannous chloride As T. 5 grammes made into a paste in a porcelain dish with 1 gramme of calcium hydroxide As T. and 5 millilitres of water, drying and gently igniting, dissolving the residue in 20 millilitres of brominated hydrochloric acid As T. and 10 millilitres of water, transferring to a small flask and adding sufficient solution of stannous chloride As T. to remove the excess of bromine, connecting to a condenser and distilling 20 millilitres, then adding to the distillate 40 millilitres of hot water and 3 drops of solution of stannous chloride As T.	2
Bismuthi Subnitras	5 grammes heated in a porcelain dish with 2 millilitres of sulphuric acid As T. until white fumes are evolved, cooling, adding 5 millilitres of water and again heating until white fumes are evolved, dissolving the residue when cold in 20 millilitres of water and 10 millilitres of stannated hydrochloric acid As T., transferring to a small flask, connecting to a condenser and distilling 20 millilitres, adding to the distillate a little solution of bro-	2

Substance.	Solution to be examined.	Limit of Arsenic : Parts per million.
Borax	mine As T. to oxidise any sulphurous acid, removing excess of bromine by a few drops of solution of stannous chloride As T. and adding 40 millilitres of hot water. 2 grammes with 4 grammes of citric acid As T. in 50 millilitres of hot water, adding 12 millilitres of stannated hydrochloric acid As T.	5
Calcii Carbonas Præcipitatus	2 grammes in 14 millilitres of brominated hydrochloric acid As T. and 45 millilitres of hot water, removing excess of bromine by a few drops of solution of stannous chloride As T.	5
Calcii Chloridum	2 grammes treated as described under "Acidum Aceticum."	5
Calcii Hydras	2 grammes in 16 millilitres of brominated hydrochloric acid As T. and 45 millilitres of hot water, removing excess of bromine by a few drops of solution of stannous chloride As T.	5
Calcii Hypophosphis	2 grammes mixed in the cold with 2 grammes of potassium chlorate and 18 millilitres of hydrochloric acid As T., then warming to expel excess of chlorine, adding 40 millilitres of hot water and a few drops of solution of stannous chloride As T.	5

No.	Title	Page
1	The American Medical Association's position on the question of the right of the physician to refuse to perform an abortion.	1
2	The American Medical Association's position on the question of the right of the physician to refuse to perform a hysterectomy.	2
3	The American Medical Association's position on the question of the right of the physician to refuse to perform a castration.	3
4	The American Medical Association's position on the question of the right of the physician to refuse to perform a lobotomy.	4
5	The American Medical Association's position on the question of the right of the physician to refuse to perform a craniotomy.	5
6	The American Medical Association's position on the question of the right of the physician to refuse to perform a spinal tap.	6

APPENDICES

511

Substance.	Solution to be examined.	Limit of Arsenic : Parts per million.
Calcii Lactas	2 grammes treated as described under "Ammonii Bromidum."	5
Calcii Phosphas	2 grammes in 50 millilitres of hot water and 14 millilitres of stannated hydrochloric acid As T.	5
Calx	2 grammes in 18 millilitres of brominated hydrochloric acid As T. and 40 millilitres of water, removing excess of bromine by a few drops of solution of stannous chloride As T.	5
Creta Præparata	2 grammes treated as described under "Calcii Carbonas Præcipitatus."	5
Cupri Sulphas	1 gramme dissolved in a small flask with 10 millilitres of water and 15 millilitres of hydrochloric acid As T., adding 5 drops of solution of stannous chloride As T., connecting to a condenser and distilling 20. millilitres, adding a little solution of bromine As T. to the distillate to oxidise any sulphurous acid, removing excess of bromine by a few drops of solution of stannous chloride As T., finally adding 40 millilitres of hot water.	10
Ferri Carbonas Saccharatus	2 grammes made into a paste with 1 gramme of calcium hydroxide As T. and 2 millilitres of water in a porcelain dish, drying and gently igniting, dissolving the residue in	5

Substance.	Solution to be examined.	Limit of Arsenic : Parts per million.
	20 millilitres of brominated hydrochloric acid As T. and 10 millilitres of water, transferring to a small flask, adding solution of stannous chloride As T. until the yellow colour disappears, then connecting to a condenser and distilling 24 millilitres, finally adding to the distillate 35 millilitres of hot water and 3 drops of solution of stannous chloride As T.	
Ferri et Ammonii Citras	2 grammes treated as described under "Ferri Carbonas Saccharatus."	5
Ferri et Potassii Tartras	2 grammes treated as described under "Ferri Carbonas Saccharatus."	5
Ferri et Quininæ Citras	2 grammes treated as described under "Ferri Carbonas Saccharatus."	5
Ferri Phosphas Saccharatus	2 grammes treated as described under "Ferri Carbonas Saccharatus."	5
Ferri Sulphas	5 grammes dissolved in a small flask with 10 millilitres of water and 15 millilitres of hydrochloric acid As T., adding solution of stannous chloride As T. until the yellow colour disappears, connecting to a condenser and distilling 20 millilitres, adding a little solution of bromine As T. to the distillate to oxidise any	2

Substance.	Solution to be examined.	Limit of Arsenic : Parts per million.
	sulphurous acid, removing excess of bromine by a few drops of solution of stannous chloride As T., and finally adding 40 millilitres of hot water.	
Ferri Sulphas Exsiccatus	2 grammes treated as described under "Ferri Sulphas."	5
Ferrum	0.05 gramme mixed in a small flask with 0.1 gramme of potassium chlorate As T. and 7 millilitres of water, adding 11 millilitres of hydrochloric acid As T. and, when the reaction has ceased and all the iron is dissolved, boiling gently to expel chlorine, then adding solution of stannous chloride As T. until the yellow colour disappears, connecting to a condenser and distilling 14 millilitres, finally adding to the distillate 50 millilitres of hot water and a few drops of solution of stannous chloride As T.	200
Ferrum Redactum	0.05 gramme treated as described under "Ferrum."	200
Glucosum	5 grammes treated as described under "Acidum Hydriodicum Dilutum."	2
Glycerinum	2.5 grammes treated as described under "Acidum Aceticum."	4
Liquor Ammoniae Fortis	20 grammes evaporated on a water-bath until reduced to 5	0.5

Substance.	Solution to be examined.	Limit of Arsenic : Parts per million.
Liquor Ferri Perchloridi Fortis	millilitres, adding 40 millilitres of water and 15 millilitres of brominated hydrochloric acid As T., and removing excess of bromine by a few drops of solution of stannous chloride As T. 1 gramme heated in a porcelain dish with 1 millilitre of sulphuric acid As T. until white fumes are evolved, cooling, adding an equal volume of water and again heating until white fumes are evolved, dissolving the residue in 10 millilitres of water and 15 millilitres of hydrochloric acid As T., transferring to a small flask, adding solution of stannous chloride As T. until the yellow colour disappears, connecting to a condenser and distilling 20 millilitres, adding to the distillate a little solution of bromine As T. to oxidise any sulphurous acid, removing excess of bromine by a few drops of solution of stannous chloride As T., and then adding 40 millilitres of hot water.	10
Liquor Ferri Persulphatis	2 grammes treated as described under "Liquor Ferri Perchloridi Fortis."	5
Liquor Magnesii Bicarbonatis	50 millilitres with 13 millilitres of brominated hydrochloric acid As T., removing excess	0.2

Substance.	Solution to be examined.	Limit of Arsenic : Parts per million.
	of bromine by a few drops of solution of stannous chloride As T.	
Lithii Carbonas	2 grammes treated as described under "Calcii Hydras."	5
Lithii Citras	5 grammes in 45 millilitres of hot water, adding 15 millilitres of stannated hydrochloric acid As T.	2
Magnesia Levis	2 grammes with 40 millilitres of water and 20 millilitres of brominated hydrochloric acid As T., removing excess of bromine by a few drops of solution of stannous chloride As T.	5
Magnesia Ponderosa	2 grammes treated as described under "Magnesia Levis."	5
Magnesii Carbonas Levis	2 grammes in 45 millilitres of hot water and 15 millilitres of brominated hydrochloric acid As T., removing excess of bromine by a few drops of solution of stannous chloride As T.	5
Magnesii Carbonas Ponderosus	2 grammes treated as described under "Magnesii Carbonas Levis."	5
Magnesii Sulphas	2 grammes treated as described under "Acidum Aceticum."	5
Potassii Acetas	2 grammes treated as described under "Ammonii Bromidum."	5
Potassii Bicarbonas	2 grammes in 50 millilitres of hot water, adding 12 millilitres of brominated hydrochloric	5

No.	Description	Amount
1	Jan 1st 1900	
2	Jan 2nd 1900	
3	Jan 3rd 1900	
4	Jan 4th 1900	
5	Jan 5th 1900	
6	Jan 6th 1900	
7	Jan 7th 1900	
8	Jan 8th 1900	
9	Jan 9th 1900	
10	Jan 10th 1900	
11	Jan 11th 1900	
12	Jan 12th 1900	
13	Jan 13th 1900	
14	Jan 14th 1900	
15	Jan 15th 1900	
16	Jan 16th 1900	
17	Jan 17th 1900	
18	Jan 18th 1900	
19	Jan 19th 1900	
20	Jan 20th 1900	
21	Jan 21st 1900	
22	Jan 22nd 1900	
23	Jan 23rd 1900	
24	Jan 24th 1900	
25	Jan 25th 1900	
26	Jan 26th 1900	
27	Jan 27th 1900	
28	Jan 28th 1900	
29	Jan 29th 1900	
30	Jan 30th 1900	
31	Jan 31st 1900	

Substance,	Solution to be examined,	Limit of Arsenic : Parts per million.
	acid As T., removing excess of bromine by a few drops of solution of stannous chloride As T.	
Potassii Bromidum	2 grammes treated as described under "Ammonii Bromidum."	5
Potassii Carbonas	5 grammes in 50 millilitres of hot water, adding 16 millilitres of brominated hydrochloric acid As T., removing excess of bromine by a few drops of solution of stannous chloride As T.	2
Potassii Chloras	2 grammes mixed in the cold with 10 millilitres of water and 20 millilitres of hydrochloric acid As T. and, when the reaction is complete, warming to expel chlorine, then adding a few drops of solution of stannous chloride As T. and 30 millilitres of hot water.	5
Potassii Citras	5 grammes treated as described under "Lithii Citras."	2
Potassii Iodidum	2 grammes treated as described under "Ammonii Bromidum."	5
Potassii Nitras	2 grammes heated in a porcelain dish with 2 millilitres of sulphuric acid As T. and 5 millilitres of water until white fumes are evolved, cooling, adding 3 millilitres of water and again heating until white fumes are evolved, finally cooling and adding to the residue 50 millilitres of hot water and	5

Substance.	Solution to be examined.	Limit of Arsenic : Parts per million.
	10 millilitres of stannated hydrochloric acid As T.	
Potassii Sulphas	2 grammes treated as described under "Acidum Aceticum."	5
Potassii Tartras	5 grammes treated as described under "Calcii Phosphas."	2
Potassii Tartras Acidus	5 grammes in 50 millilitres of hot water and 13 millilitres of brominated hydrochloric acid As T., removing excess of bromine by a few drops of solution of stannous chloride As T.	2
Sodii Benzoas	5 grammes gently heated in a porcelain dish, until inflammable vapours cease to be evolved, dissolving the residue (ignoring any carbon) in 14 millilitres of brominated hydrochloric acid As T. and 50 millilitres of hot water and removing excess of bromine by a few drops of solution of stannous chloride As T.	2
Sodii Bicarbonas	5 grammes treated as described under "Potassii Carbonas."	2
Sodii Bromidum	2 grammes treated as described under "Ammonii Bromidum."	5
Sodii Carbonas	5 grammes in 50 millilitres of hot water, adding 14 millilitres of brominated hydrochloric acid As T. and removing excess of bromine by a few drops of solution of stannous chloride As T.	2

No.	Description of work	Remarks
	To examine the...	
1	To examine the...	...
2	To examine the...	...
3	To examine the...	...
4	To examine the...	...
5	To examine the...	...
6	To examine the...	...
7	To examine the...	...

Substance.	Solution to be examined.	Limit of Arsenic : Parts per million.
Sodii Carbonas Exsiccatus	2 grammes treated as described under "Sodii Carbonas."	5
Sodii Chloridum	5 grammes treated as described under "Acidum Aceticum."	2
Sodii et Potassii Tartras	5 grammes treated as described under "Calcii Phosphas."	2
Sodii Hypophosphis	2 grammes treated as described under "Calcii Hypophosphis."	5
Sodii Iodidum	2 grammes in 50 millilitres of hot water, adding 11 millilitres of stannated hydrochloric acid As T.	5
Sodii Nitris	2 grammes treated as described under "Potassii Nitras."	5
Sodii Phosphas	2 grammes treated as described under "Acidum Aceticum."	5
Sodii Phosphas Acidus	5 grammes treated as described under "Acidum Aceticum."	2
Sodii Salicylas	5 grammes treated as described under "Sodii Benzoas."	2
Sodii Sulphas	5 grammes treated as described under "Acidum Aceticum."	2
Sodii Sulphis	2 grammes with 0.5 gramme of potassium chlorate As T. in 5 millilitres of warm water, adding 12 millilitres of hydrochloric acid As T., then warming to expel excess of chlorine and adding 45 millilitres of hot water and a few drops of solution of stannous chloride As T.	5

No. of cases	Description of cases	Remarks
1	A female, aged 45, with a history of chronic rheumatism, and a recent attack of acute rheumatism, with severe joint pain, and swelling of the joints.	Treated with salicylic acid, and with good result.
2	A female, aged 35, with a history of chronic rheumatism, and a recent attack of acute rheumatism, with severe joint pain, and swelling of the joints.	Treated with salicylic acid, and with good result.
3	A female, aged 40, with a history of chronic rheumatism, and a recent attack of acute rheumatism, with severe joint pain, and swelling of the joints.	Treated with salicylic acid, and with good result.
4	A female, aged 30, with a history of chronic rheumatism, and a recent attack of acute rheumatism, with severe joint pain, and swelling of the joints.	Treated with salicylic acid, and with good result.
5	A female, aged 45, with a history of chronic rheumatism, and a recent attack of acute rheumatism, with severe joint pain, and swelling of the joints.	Treated with salicylic acid, and with good result.
6	A female, aged 35, with a history of chronic rheumatism, and a recent attack of acute rheumatism, with severe joint pain, and swelling of the joints.	Treated with salicylic acid, and with good result.
7	A female, aged 40, with a history of chronic rheumatism, and a recent attack of acute rheumatism, with severe joint pain, and swelling of the joints.	Treated with salicylic acid, and with good result.
8	A female, aged 30, with a history of chronic rheumatism, and a recent attack of acute rheumatism, with severe joint pain, and swelling of the joints.	Treated with salicylic acid, and with good result.
9	A female, aged 45, with a history of chronic rheumatism, and a recent attack of acute rheumatism, with severe joint pain, and swelling of the joints.	Treated with salicylic acid, and with good result.
10	A female, aged 35, with a history of chronic rheumatism, and a recent attack of acute rheumatism, with severe joint pain, and swelling of the joints.	Treated with salicylic acid, and with good result.
11	A female, aged 40, with a history of chronic rheumatism, and a recent attack of acute rheumatism, with severe joint pain, and swelling of the joints.	Treated with salicylic acid, and with good result.

Substance.	Solution to be examined.	Limit of Arsenic : Parts per million.
Strontii Bromidum	2 grammes treated as described under "Ammonii Bromidum."	5
Sulphur Præcipitatum	2 grammes digested for one hour on a water-bath with 50 millilitres of water and 5 millilitres of solution of ammonia, filtering and evaporating the filtrate to low bulk, adding 10 millilitres of nitric acid As T. and boiling to oxidise any sulphur, then adding 2 millilitres of sulphuric acid As T. and heating until white fumes are evolved, cooling, adding 2 millilitres of water and again heating until white fumes are evolved, finally adding 50 millilitres of hot water and 10 millilitres of stannated hydrochloric acid As T.	5
Sulphur Sublimatum	2 grammes treated as described under "Sulphur Præcipitatum."	5
Zinci Acetas	2 grammes treated as described under "Ammonii Bromidum."	5
Zinci Carbonas	1 gramme treated as described under "Potassii Carbonas."	10
Zinci Chloridum	2 grammes treated as described under "Acidum Aceticum."	5
Zinci Oxidum	1 gramme treated as described under "Potassii Carbonas."	10
Zinci Sulphas	2 grammes treated as described under "Acidum Aceticum."	5

Substance.	Solution to be examined.	Limit of Arsenic : Parts per million.
Zinci Valerianas	2 grammes made into a paste in a porcelain dish with 2 grammes of calcium hydroxide As T. and 5 millilitres of water, drying and gently igniting, then dissolving the residue in 18 millilitres of brominated hydrochloric acid As T. and 40 millilitres of hot water and removing excess of bromine by a few drops of solution of stannous chloride As T.	5

VII

DETERMINATION OF THE ACID VALUE OF FIXED OILS, FATS, WAXES AND RESINS

The acid value of a fixed oil, fat or wax (the number of milligrams of potassium hydroxide required to neutralise the free acid in 1 gramme of the substance) is determined as follows :—

Mix 10 grammes of the substance with 50 millilitres of alcohol (90 per cent.), previously neutralised with *solution of potassium hydroxide*, add 1 millilitre of *solution of phenolphthalein*, heat until the fat or wax is melted and titrate with *N/10 solution of potassium hydroxide*, shaking constantly. Note the number of millilitres required (*a*). Calculate the acid value from the following formula :—

$$\text{Acid value} = \frac{a \times 0.0056 \times 1000}{\text{weight of substance taken}}$$

The acid value of a resin is determined by dissolving from 1 to 5 grammes of the substance in 50 millilitres of alcohol (90 per cent.), previously neutralised, and titrating and calculating as above directed.

**DETERMINATION OF THE SAPONIFICATION VALUE
OF FIXED OILS, FATS, WAXES, AND RESINS**

The saponification value of a fixed oil, fat, wax, or resin (the number of milligrams of potassium hydroxide required for the complete saponification of 1 gramme of the substance) is determined as follows :—

Dissolve 40 grammes of *potassium hydroxide* in 1000 millilitres of *alcohol* (90 per cent.), previously neutralised; allow the solution to stand for twenty-four hours and filter. Weigh from 1.5 to 2 grammes of the substance in a flask having a capacity of about 200 millilitres; add 25 millilitres of *alcoholic solution of potassium hydroxide*, attach a reflux condenser and heat on a water-bath for thirty minutes; add 1 millilitre of *solution of phenolphthalein* and titrate the excess of alkali with *N/2 solution of hydrochloric acid*. Note the number of millilitres required (*a*). At the same time treat 25 millilitres of the *alcoholic solution of potassium hydroxide* in a similar manner. Note the number of millilitres required (*b*). Calculate the saponification value from the following formula :—

$$\text{Saponification value} = \frac{(b-a) \times 0.028 \times 1000}{\text{weight of substance taken}}$$

**DETERMINATION OF THE IODINE VALUE OF FIXED
OILS AND FATS**

The iodine value of a fixed oil or fat (the weight of iodine absorbed by 100 parts by weight of the oil or fat under the conditions specified) is determined as follows :—

Solution to be Prepared.

Iodine Solution.—Dissolve 13 grammes of *iodine* in 1000 millilitres of *glacial acetic acid*. Titrate the solution with *N/10 solution of sodium thiosulphate*, note the proportion required and pass *chlorine*, washed and dried, through the remainder of the iodine solution until this proportion is exactly doubled. Keep the solution in a stoppered amber bottle in a cool, dark place.

Weight of substance to be taken.

Lard, Suet and Oil of Theobroma	0.8 to 1.0 gramme
Almond Oil, Castor Oil and Olive Oil	0.3 to 0.4 gramme
Cod-liver Oil and Linseed Oil	0.15 to 0.18 gramme

Time to be allowed for absorption.

Lard, Suet and Oil of Theobroma	}	. . . 1 hour
Almond Oil, Castor Oil and Olive Oil		
Cod-liver Oil and Linseed Oil	. . .	2 hours

Method of Procedure.—Place the specified weight of oil or fat in a stoppered bottle having a capacity of 800 millilitres, add 10 millilitres of *carbon tetrachloride* and dissolve. Add 25 millilitres of the iodine solution, insert the stopper, previously moistened with *solution of potassium iodide*, and keep in a dark place at a temperature of about 17° for the specified time. Then add 20 millilitres of *solution of potassium iodide* and 500 millilitres of *water*. Shake, and titrate with *N/10 solution of sodium thiosulphate*, using *mucilage of starch* as indicator. Note the number of millilitres required (a). At the same time treat 25 millilitres of the solution of iodine in a similar manner and note the number of millilitres of *N/10 solution of sodium thiosulphate* required (b). Calculate the iodine value from the following formula :—

$$\text{Iodine value} = \frac{(b-a) \times 0.01269 \times 100}{\text{weight of oil or fat taken}}$$

DETERMINATION OF THE UNSAPONIFIABLE MATTER IN A FIXED OIL OR FAT

The unsaponifiable matter in a fixed oil or fat is determined as follows :—

Boil 5 grammes of the oil or fat with 50 millilitres of *N/1 alcoholic solution of potassium hydroxide* in a flask provided with a reflux condenser on a water-bath for thirty minutes. Transfer the contents of the flask to a porcelain dish and evaporate the alcohol on a water-bath. Dissolve the resulting soap in about 100 millilitres of hot water, cool and transfer to a separator. Add 50 millilitres of *ether*, mix thoroughly and allow to separate. Transfer the soap solution to another separator and again extract with 50 millilitres of *ether*. Mix the ethereal solutions, wash with three portions, 20 millilitres each, of *water*, transfer to a tared flask, evaporate the *ether*, dry the residue at 100° and weigh. The weight of the residue multiplied by 20 gives the percentage of unsaponifiable matter.

THE UNIVERSITY OF CHICAGO
THE DIVISION OF THE PHYSICAL SCIENCES
THE DIVISION OF THE BIOLOGICAL SCIENCES
THE DIVISION OF THE SOCIAL SCIENCES

THE UNIVERSITY OF CHICAGO
THE DIVISION OF THE PHYSICAL SCIENCES
THE DIVISION OF THE BIOLOGICAL SCIENCES
THE DIVISION OF THE SOCIAL SCIENCES

THE UNIVERSITY OF CHICAGO
THE DIVISION OF THE PHYSICAL SCIENCES
THE DIVISION OF THE BIOLOGICAL SCIENCES
THE DIVISION OF THE SOCIAL SCIENCES

THE UNIVERSITY OF CHICAGO
THE DIVISION OF THE PHYSICAL SCIENCES
THE DIVISION OF THE BIOLOGICAL SCIENCES
THE DIVISION OF THE SOCIAL SCIENCES

THE UNIVERSITY OF CHICAGO
THE DIVISION OF THE PHYSICAL SCIENCES
THE DIVISION OF THE BIOLOGICAL SCIENCES
THE DIVISION OF THE SOCIAL SCIENCES

**DETERMINATION OF THE ESTERS PRESENT IN
VOLATILE OILS**

The amount of esters present in a volatile oil is determined as follows :—

Dissolve from 2 to 5 grammes of the oil in 25 millilitres of alcohol (90 per cent.) and neutralise the solution, if necessary, with *N/1 alcoholic solution of potassium hydroxide*. Then add 25 millilitres of *N/1 alcoholic solution of potassium hydroxide*, boil in a flask provided with a reflux condenser on a water-bath for one hour and titrate the excess of alkali with *N/1 solution of sulphuric acid*. Note the number of millilitres required (*a*). At the same time treat 25 millilitres of *alcohol* (90 per cent.) in a similar manner and note the number of millilitres of acid required (*b*). Calculate the percentage of esters in the oil from the following formula :—

$$\text{Percentage of esters} = \frac{(b - a) \times \text{molecular weight of ester}}{\text{weight of oil taken} \times 10}$$

**DETERMINATION OF THE ALCOHOLS PRESENT IN
VOLATILE OILS**

The amount of alcohols present in a volatile oil is determined as follows :—

Heat 10 millilitres of the oil with 10 millilitres of *acetic anhydride* and 2 grammes of *anhydrous sodium acetate* in an acetylation flask for two hours ; add 100 millilitres of *water*, transfer to a separator and, after separation, remove the aqueous layer and wash the oily layer free from acidity with successive quantities of 100 millilitres of *water*, thoroughly shaking and allowing to separate each time. Dry the acetylated oil with *anhydrous sodium sulphate* and filter. Then treat from 2 to 5 grammes of the acetylated oil according to the process for the determination of the esters present in volatile oils. Calculate the percentage of alcohol present in the oil from the following formula :—

Percentage of Alcohol =

$$\frac{\frac{1}{10} \times (b - a) \times \text{molecular weight of the alcohol}}{\text{weight of acetylated oil taken} - 0.042 (b - a)}$$

ALKALOIDAL VALUE: LIMIT OF ERROR

Successive assays of any substance may be found to vary within narrow limits, which are taken to be the "limit of error." When an average of successive assays shows a deviation greater or less than the "limit of error," the preparation examined does not conform to the standard prescribed in the British Pharmacopœia.

VIII

DETERMINATION OF MELTING POINTS

Prepare some thin-walled glass tubes having an internal diameter of about one millimetre by heating thick-walled, soft glass tubing in a blow-pipe flame, drawing out the heated portion until it has the required diameter, then allowing a small flame to play against the middle of this tube so as to make and seal two tubes which are finally to be cut off to suitable lengths; these tubes should be freshly made; if stored they should be carefully protected from moisture.

Dry a very small quantity of the powdered substance at 100° for fifteen minutes; transfer a portion to one of these tubes, shaking the powder down to the sealed extremity. Attach the tube to a thermometer so that the substance is near the middle of the bulb. Heat a suitable liquid, such as *sulphuric acid*, to which *nitric acid* in the proportion of about 4 drops to 100 millilitres has been added, in a beaker or boiling tube about 3 centimetres in diameter to about 5° below the expected melting point of the substance; this point, if not known, being determined by a preliminary experiment. Then introduce the thermometer with the attached tube, and slowly heat, efficiently stirring, and note the temperature at which the substance first shows visible change; this temperature is regarded as the uncorrected melting point of the substance. The whole of the mercury column of the thermometer should be immersed in the liquid, but as this is seldom practicable the following correction is to be applied:—

To the thermometer attach a second thermometer in such a position that its bulb is near the middle of the emergent column of mercury, and observe its temperature. Calculate the corrected melting point of the substance from the following formula:—

Corrected melting point = $T + 0.000143 (T - t) N$, in which

T = the uncorrected melting point ;

t = the mean temperature of the emergent column ;

N = the length of the emergent column in scale degrees.

The melting point of solid fats, fatty acids, and waxes is determined by running a small quantity of the melted substance into an unsealed melting point tube, allowing it to stand for twenty-four hours, and then, using *water* in the place of sulphuric acid, determining in the manner described the temperature at which the substance becomes a clear liquid ; this temperature is regarded as the uncorrected melting point.

DETERMINATION OF BOILING POINTS

Place the liquid under examination in a distillation flask having a side tube for conveying the vapour to a condenser, while a thermometer passes through a cork inserted in the neck. The bulb of the thermometer should be opposite the entrance of the side tube, and not immersed in the liquid or exposed to splashes of it, and the whole of the column of mercury should, if possible, be surrounded by the vapour ; the temperature is read off as soon as the liquid is distilling freely. If any considerable length of the column of mercury is not surrounded by the vapour, the temperature of the emergent column should be ascertained as directed under the "Determination of Melting Points," and the same correction applied.

DETERMINATION OF REFRACTIVE INDICES

The refractive index of a substance should be determined in a suitable apparatus as nearly as possible at the temperature specified. Should the temperature be either above or below the specified temperature, the following correction is to be applied :—

For each degree below the specified temperature subtract 0.00038 from the observed refractive index ; for each degree above the specified temperature add 0.00038.

OPTICAL ROTATION

The optical rotation, unless otherwise specified, is the angle through which the plane of polarisation is turned when

a layer of the liquid substance one decimetre in thickness and at a temperature of 20° is examined by sodium light.

The specific rotation of a substance in solution may be calculated from the formula $\frac{\alpha \times 100}{l \times c}$, where α is the observed optical rotation, l the thickness in decimetres of the layer examined and c the number of grammes of substance contained in 100 millilitres of the solution.

SPECIFIC GRAVITY

The specific gravity of a substance is the weight of a given volume of that substance at 15.5° as compared with the weight of an equal volume of distilled water at the same temperature, unless otherwise specified.

IX

PROCESS OF PERCOLATION

Moisten the solid materials with the prescribed quantity of menstruum, set aside for four hours in a well-closed vessel, pack in a percolator and add sufficient of the menstruum to saturate the materials and leave a layer above. Macerate for twenty-four hours; then allow percolation to proceed slowly until the percolate measures about three-fourths of the volume required for the finished tincture. Press the marc, mix the expressed liquid with the percolate and add sufficient of the menstruum to produce the required volume. Clarify by subsidence or filtration, if necessary.

PROCESS OF REPERCOLATION

Take one hundred parts by weight of the drug and divide it into five equal portions. Moisten the first portion with the menstruum, set aside in a closed vessel for four hours and pack in a percolator. Add sufficient of the menstruum to saturate the drug and leave a layer of liquid above. Macerate for twenty-four hours, then allow percolation to proceed slowly, collecting the percolate in fractions of twenty parts.

For a full and complete description of the new edition of the Journal, and for a list of the many new features, see the editorial page of this issue. The new edition of the Journal is a complete revision of the old, and is a most valuable addition to the medical literature of the world. It is a most valuable addition to the medical literature of the world.

The new edition of the Journal is a complete revision of the old, and is a most valuable addition to the medical literature of the world. It is a most valuable addition to the medical literature of the world.

The new edition of the Journal is a complete revision of the old, and is a most valuable addition to the medical literature of the world. It is a most valuable addition to the medical literature of the world.

The new edition of the Journal is a complete revision of the old, and is a most valuable addition to the medical literature of the world. It is a most valuable addition to the medical literature of the world.

Moisten the second portion of the drug with the first fraction of the percolate collected. Set aside, pack in a percolator, macerate and percolate as before, using as menstruum the successive fractions of percolate collected from the portion first treated. Again collect the percolate in fractions of twenty parts.

In turn, treat in the manner described above the third, fourth and fifth portions of drugs with the fractions of percolate obtained in the percolation of the portion immediately preceding, using the successive fractions of percolate in order until a liquid extract is obtained of the required strength.

PROCESS OF MACERATION

Place the solid materials with the whole of the menstruum in a closed vessel; shake occasionally during seven days; strain; press the marc; mix the liquids obtained. Clarify by subsidence or filtration if necessary.

X

PROCESS FOR PREPARATION OF DISCS (LAMELLÆ)

Discs are prepared by the following process :—

Gelatin.	.	.	.	.	.	.	18 grammes
Glycerin	.	.	.	.	.	.	2 grammes
Distilled Water	.	.	.	.	.	.	88 grammes

Mix the Glycerin with the Distilled Water, allow the Gelatin to soak in the mixture till soft, and then dissolve by a gentle heat.

Take the prescribed quantity of the above basis, melt it by a gentle heat, add the prescribed quantity of medicament, dissolve and mix. Pour the melted and medicated basis upon a sheet of plate glass 10 centimetres square, previously thinly coated with White Beeswax, in such a manner that the solution is evenly distributed. Dry at a temperature not exceeding 36°, and from the film thus obtained cut discs 3·17 millimetres in diameter.

XI

*PROCESSES FOR PREPARATION OF LOZENGES**With Fruit Basis*

Take five hundred times the quantity of the drug ordered for one lozenge. Mix with it 6·5 grammes of Tragacanth and 26 grammes of Refined Sugar, both in fine powder. Add sufficient of the black-currant paste of commerce to produce 650 grammes, beat into a uniform mass, divide into 500 equal lozenges and dry in a hot-air chamber at a moderate temperature.

With Rose Basis

Take five hundred times the quantity of the drug ordered for one lozenge. Treat it as described under "Preparation with Simple Basis," previously mixing with the Refined Sugar 0·025 millilitre of Oil of Rose.

With Simple Basis

Take five hundred times the quantity of the drug ordered for one lozenge, mix it with 496 grammes of Refined Sugar and 19·5 grammes of Gum Acacia, both in fine powder. Make the mixture into a paste with 35 millilitres of Mucilage of Gum Acacia and a sufficient quantity of Distilled Water, divide into 500 equal lozenges and dry in a hot-air chamber at a moderate temperature.

With Tolu Basis

Take five hundred times the quantity of the drug ordered for one lozenge; dissolve such salts of alkaloids as may be ordered in 10 millilitres of Distilled Water; mix the solution with 482 grammes of Refined Sugar and 19·5 grammes of Gum Acacia, both in fine powder. Incorporate 10 millilitres of Tincture of Balsam of Tolu, and any other drugs ordered for the lozenges. Make into a paste with 35·5 millilitres of Mucilage of Gum Acacia and a sufficient quantity of Distilled Water; divide into 500 equal lozenges and dry in a hot-air chamber at a moderate temperature.

XII

*ALTERNATIVE PREPARATIONS SANCTIONED FOR
USE IN TROPICAL AND SUBTROPICAL PARTS
OF THE BRITISH EMPIRE*

Aquæ Olei Anethi, Anisi, Carui, Cinnamoni, Fœniculi, Menthæ Piperitæ, Menthæ Viridis.—Each of these Waters may be prepared by triturating the corresponding Oil with twice its weight of Calcium Phosphate and five hundred times its volume of Distilled Water and filtering the mixture. In tropical and subtropical parts of the Empire these Waters may be used in place of the corresponding *Aquæ* of the Text of the Pharmacopœia.

Emplastra.—In tropical and subtropical parts of the Empire, more or less Hard Soap, Resin, or Yellow Beeswax, may be employed in the preparation of the Plasters of the Text of the Pharmacopœia, when prevailing high temperatures otherwise render the basis too soft for convenient use; but the official proportion of the active ingredient must in all cases be maintained.

Extracta Liquida.—Any Liquid Extract, defined in the Text of the Pharmacopœia, containing less than one-fourth of its weight of Alcohol (90 per cent.), may have the proportion of Alcohol (90 per cent.) increased to an amount not exceeding one-fourth of the weight of the Extract, in tropical and subtropical parts of the Empire where otherwise the preparation would be liable to ferment.

Limonis Cortex Siccatus.—In tropical and subtropical parts of the Empire, when fresh Lemon Peel cannot be obtained, Dried Lemon Peel may be used in preparing Compound Infusion of Orange Peel, Compound Infusion of Gentian, Syrup of Lemon, and Tincture of Lemon.

Oleum Olivæ.—In India, and in the Eastern, African, Australasian, and North American Divisions of the Empire, *Arachis* Oil or Sesame Oil, but no other oil or fat, may be employed in making the official Liniments, Plasters, Ointments, and Soaps for which Olive Oil is directed to be used.

Suppositoria.—More or less White Beeswax, according to prevailing temperatures, may be used in place of an equivalent amount of Oil of *Theobroma* in tropical and subtropical

parts of the Empire, when otherwise the Suppositories of the Text of the Pharmacopœia would be too soft for convenient use.

Syrupus Rhœados.—In tropical and subtropical parts of the Empire, when prevailing high temperatures render this preparation liable to ferment, the proportion of Alcohol (90 per cent.) may be increased, but not to more than double the proportion stated in the Text of the Pharmacopœia, an equivalent quantity of Distilled Water being omitted.

Unguenta.—In tropical and subtropical parts of the Empire more or less Benzoated Lard, Prepared Lard, Benzoated Suet, Prepared Suet, Yellow Beeswax, or White Beeswax, may be employed in the preparation of the Ointments of the Text of the Pharmacopœia when prevailing high temperatures otherwise render the basis too soft for convenient use; but the official proportion of the active ingredient must in all cases be maintained.

XIII

TABLE OF PROPORTIONS RELATING TO THE PREPARATION OF DILUTED ALCOHOLS

Volume of Alcohol (90 per cent.) to be diluted with Distilled Water to 1000 millilitres at 15·5° in order to give the Diluted Alcohols of the British Pharmacopœia.

Alcohol Required.	Specific Gravity.	Volume of Alcohol (90 per cent.).
70 per cent.	0·8899	777·8 millilitres
60 per cent.	0·9134	666·7 millilitres
45 per cent.	0·9435	500·0 millilitres
20 per cent.	0·9760	222·2 millilitres

XIV

*NAMES, SYMBOLS AND ATOMIC WEIGHTS OF THE
CHIEF ELEMENTS MENTIONED IN THE
BRITISH PHARMACOPŒIA ; O = 16*

Name.	Symbol.	Atomic Weight.
Aluminium	Al	27.1
Antimony	Sb	120.2
Arsenic	As	74.96
Barium	Ba	137.37
Bismuth	Bi	208.0
Boron	B	11.0
Bromine	Br	79.92
Calcium	Ca	40.07
Carbon	C	12.00
Chlorine	Cl	35.46
Chromium	Cr	52.0
Copper	Cu	63.57
Gold	Au	197.2
Hydrogen	H	1.008
Iodine	I	126.92
Iron	Fe	55.84
Lead	Pb	207.1
Lithium	Li	6.94
Magnesium	Mg	24.32
Manganese	Mn	54.93
Mercury	Hg	200.6
Nitrogen	N	14.01
Oxygen	O	16.00
Phosphorus	P	31.04
Platinum	Pt	195.2
Potassium	K	39.1
Silver	Ag	107.88
Sodium	Na	23.00
Strontium	Sr	87.63
Sulphur	S	32.07
Tin	Sn	119.0
Zinc	Zn	65.37

XV

WEIGHTS AND MEASURES OF THE BRITISH
PHARMACOPŒIA

METRIC SYSTEM

MEASURES OF MASS

1 Milligram	= the thousandth part of one grm. or 0.001	grm.
1 Centigram	= the hundredth part of one grm. or 0.01	grm.
1 Decigram	= the tenth part of one grm. or 0.1	grm.
1 Gramme	= the thousandth part of the Inter- national Kilogram	1.0 grm.

MEASURES OF CAPACITY

1 Centimil	= the volume at 4° of	0.01	grm. of water
1 Decimil	= „ „	0.1	grm. of water
1 Millilitre (1 mil)	= „ „	1.0	grm. of water
1 Centilitre	= „ „	10.0	grm. of water
1 Decilitre	= „ „	100.0	grm. of water
1 Litre	= „ „	1000.0	grm. of water

MEASURES OF LENGTH

1 Micron	= one-millionth part of one metre or 0.000001	metre
1 Millimetre	= one-thousandth part of one metre	or 0.001 metre
1 Centimetre	= one-hundredth part of one metre	or 0.01 metre
1 Decimetre	= one-tenth part of one metre or 0.1	metre
1 Metre		1.0 metre

IMPERIAL SYSTEM

MEASURES OF MASS

1 Grain	gr.	
1 Ounce (Avoir.)	oz.	= 437.5 grains

MEASURES OF CAPACITY

1 Minim	min.	
1 Fluid Drachm	fl. dr.	= 60 minims
1 Fluid Ounce	fl. oz.	= 8 fluid drachms

RELATION OF VOLUME TO MASS

- 1 Minim is the volume at 16.7° (62° F.) of 0.9114583 grain of water
 1 Fluid Drachm is the volume at 16.7° (62° F.) of 54.6875 grains of water
 1 Fluid Ounce is the volume of 1 ounce or 437.5 grains of water
 109.7143 minims¹ = the volume at 16.7° (62° F.) of 100 grains of water

RELATION OF THE METRIC STANDARDS TO THE IMPERIAL STANDARDS

Standards of Mass

1 Milligram	=	0.015	grain nearly
1 Centigram	=	0.154	grain nearly
1 Decigram	=	1.543	grains nearly
1 Gramme	=	15.4323564	grains
1 Kilogram	=	15432.3564	grains

Standards of Capacity

- 1 Millilitre = 16.9 minims nearly
 1 Litre = 1.75980 pints, or 1 pint 15 fl. oz. 1 fl. dr. 34 m. nearly

Standards of Length

1 Micron	=	0.000039370 inch
1 Millimetre	=	0.039370 inch
1 Centimetre	=	0.39370 inch
1 Decimetre	=	3.9370 inches
1 Metre	=	39.370113 inches

RELATION OF THE IMPERIAL STANDARDS TO THE METRIC STANDARDS

Standards of Mass

1 Grain	=	0.0648 gm.
1 Ounce (Avoir.)	=	28.350 gm.

Standards of Capacity

1 Minim	= 0.000059 litre or	{ 0.059 millilitre nearly
1 Fluid Drachm	= 0.003552 litre or	{ 3.552 mil lilitres nearly
1 Fluid Ounce	= 0.0284123 litre or	{ 28.412 millilitres nearly

¹ Taken as 110 minims throughout the Pharmacopœia.

XVI

TABLE OF APPROXIMATE EQUIVALENCES
ADOPTED IN STATING DOSES (IMPERIAL AND
METRIC) IN THE TEXT OF THE BRITISH
PHARMACOPŒIA

WEIGHTS.

Imperial. Grains.		Metric. Milligrams.	Imperial. Grains.		Metric. Decigrams.
$\frac{1}{200}$	.	0.3	3	.	2
$\frac{1}{100}$	.	0.6	5	.	3
$\frac{1}{64}$	.	1	8	.	5
$\frac{1}{40}$	.	1.5	10	.	6
$\frac{1}{32}$	.	2	15	.	10
$\frac{1}{25}$	.	2.5	20	.	12
$\frac{1}{20}$	.	3	30	.	20
$\frac{1}{16}$	.	4	60	.	40
$\frac{1}{10}$	.	6	Grains.		Grammes.
$\frac{1}{8}$	.	8	15	.	1
$\frac{1}{5}$	.	12	30	.	2
$\frac{1}{4}$	.	16	45	.	3
$\frac{1}{3}$	.	30	60	.	4
Grains.		Centigrams.	120	.	8
1	.	6	150	.	10
2	.	12	180	.	12
3	.	20	240	.	16
4	.	25	480	.	32
5	.	30			
8	.	50			
10	.	60			

VOLUMES.

Minims.		Centimils.	Minims.		Mils.
$\frac{1}{2}$	.	3	15	.	1
1	.	6	30	.	2
2	.	12	45	.	3
3	.	18	60	.	4
5	.	30	90	.	6
8	.	50	Fluid drachms.		Mils.
Minims.		Decimils.	$\frac{1}{2}$	.	2
5	.	3	1	.	4
10	.	6	2	.	8
15	.	10	6	.	24
20	.	12	Fluid ounces.		Mils.
30	.	18	$\frac{1}{2}$	.	15
60	.	36	1	.	30
			2	.	60
			4	.	120

ATTACHMENT B

100

THE FOLLOWING TABLES SHOW THE RESULTS OF THE ANALYSES OF THE SAMPLES OF THE MATERIALS SUBMITTED FOR ANALYSIS BY THE BUREAU OF MINES, U. S. DEPARTMENT OF THE INTERIOR, WASHINGTON, D. C.

TABLE I

Sample No.	Weight, gms.	Loss on ignition, %	Loss on ignition, gms.	Residue, gms.	Residue, %
1	1.0000	0.02	0.0200	0.9800	98.00
2	1.0000	0.03	0.0300	0.9700	97.00
3	1.0000	0.04	0.0400	0.9600	96.00
4	1.0000	0.05	0.0500	0.9500	95.00
5	1.0000	0.06	0.0600	0.9400	94.00
6	1.0000	0.07	0.0700	0.9300	93.00
7	1.0000	0.08	0.0800	0.9200	92.00
8	1.0000	0.09	0.0900	0.9100	91.00
9	1.0000	0.10	0.1000	0.9000	90.00
10	1.0000	0.11	0.1100	0.8900	89.00
11	1.0000	0.12	0.1200	0.8800	88.00
12	1.0000	0.13	0.1300	0.8700	87.00
13	1.0000	0.14	0.1400	0.8600	86.00
14	1.0000	0.15	0.1500	0.8500	85.00
15	1.0000	0.16	0.1600	0.8400	84.00
16	1.0000	0.17	0.1700	0.8300	83.00
17	1.0000	0.18	0.1800	0.8200	82.00
18	1.0000	0.19	0.1900	0.8100	81.00
19	1.0000	0.20	0.2000	0.8000	80.00
20	1.0000	0.21	0.2100	0.7900	79.00
21	1.0000	0.22	0.2200	0.7800	78.00
22	1.0000	0.23	0.2300	0.7700	77.00
23	1.0000	0.24	0.2400	0.7600	76.00
24	1.0000	0.25	0.2500	0.7500	75.00
25	1.0000	0.26	0.2600	0.7400	74.00
26	1.0000	0.27	0.2700	0.7300	73.00
27	1.0000	0.28	0.2800	0.7200	72.00
28	1.0000	0.29	0.2900	0.7100	71.00
29	1.0000	0.30	0.3000	0.7000	70.00
30	1.0000	0.31	0.3100	0.6900	69.00
31	1.0000	0.32	0.3200	0.6800	68.00
32	1.0000	0.33	0.3300	0.6700	67.00
33	1.0000	0.34	0.3400	0.6600	66.00
34	1.0000	0.35	0.3500	0.6500	65.00
35	1.0000	0.36	0.3600	0.6400	64.00
36	1.0000	0.37	0.3700	0.6300	63.00
37	1.0000	0.38	0.3800	0.6200	62.00
38	1.0000	0.39	0.3900	0.6100	61.00
39	1.0000	0.40	0.4000	0.6000	60.00
40	1.0000	0.41	0.4100	0.5900	59.00
41	1.0000	0.42	0.4200	0.5800	58.00
42	1.0000	0.43	0.4300	0.5700	57.00
43	1.0000	0.44	0.4400	0.5600	56.00
44	1.0000	0.45	0.4500	0.5500	55.00
45	1.0000	0.46	0.4600	0.5400	54.00
46	1.0000	0.47	0.4700	0.5300	53.00
47	1.0000	0.48	0.4800	0.5200	52.00
48	1.0000	0.49	0.4900	0.5100	51.00
49	1.0000	0.50	0.5000	0.5000	50.00
50	1.0000	0.51	0.5100	0.4900	49.00
51	1.0000	0.52	0.5200	0.4800	48.00
52	1.0000	0.53	0.5300	0.4700	47.00
53	1.0000	0.54	0.5400	0.4600	46.00
54	1.0000	0.55	0.5500	0.4500	45.00
55	1.0000	0.56	0.5600	0.4400	44.00
56	1.0000	0.57	0.5700	0.4300	43.00
57	1.0000	0.58	0.5800	0.4200	42.00
58	1.0000	0.59	0.5900	0.4100	41.00
59	1.0000	0.60	0.6000	0.4000	40.00
60	1.0000	0.61	0.6100	0.3900	39.00
61	1.0000	0.62	0.6200	0.3800	38.00
62	1.0000	0.63	0.6300	0.3700	37.00
63	1.0000	0.64	0.6400	0.3600	36.00
64	1.0000	0.65	0.6500	0.3500	35.00
65	1.0000	0.66	0.6600	0.3400	34.00
66	1.0000	0.67	0.6700	0.3300	33.00
67	1.0000	0.68	0.6800	0.3200	32.00
68	1.0000	0.69	0.6900	0.3100	31.00
69	1.0000	0.70	0.7000	0.3000	30.00
70	1.0000	0.71	0.7100	0.2900	29.00
71	1.0000	0.72	0.7200	0.2800	28.00
72	1.0000	0.73	0.7300	0.2700	27.00
73	1.0000	0.74	0.7400	0.2600	26.00
74	1.0000	0.75	0.7500	0.2500	25.00
75	1.0000	0.76	0.7600	0.2400	24.00
76	1.0000	0.77	0.7700	0.2300	23.00
77	1.0000	0.78	0.7800	0.2200	22.00
78	1.0000	0.79	0.7900	0.2100	21.00
79	1.0000	0.80	0.8000	0.2000	20.00
80	1.0000	0.81	0.8100	0.1900	19.00
81	1.0000	0.82	0.8200	0.1800	18.00
82	1.0000	0.83	0.8300	0.1700	17.00
83	1.0000	0.84	0.8400	0.1600	16.00
84	1.0000	0.85	0.8500	0.1500	15.00
85	1.0000	0.86	0.8600	0.1400	14.00
86	1.0000	0.87	0.8700	0.1300	13.00
87	1.0000	0.88	0.8800	0.1200	12.00
88	1.0000	0.89	0.8900	0.1100	11.00
89	1.0000	0.90	0.9000	0.1000	10.00
90	1.0000	0.91	0.9100	0.0900	9.00
91	1.0000	0.92	0.9200	0.0800	8.00
92	1.0000	0.93	0.9300	0.0700	7.00
93	1.0000	0.94	0.9400	0.0600	6.00
94	1.0000	0.95	0.9500	0.0500	5.00
95	1.0000	0.96	0.9600	0.0400	4.00
96	1.0000	0.97	0.9700	0.0300	3.00
97	1.0000	0.98	0.9800	0.0200	2.00
98	1.0000	0.99	0.9900	0.0100	1.00
99	1.0000	1.00	1.0000	0.0000	0.00
100	1.0000	1.01	1.0100	0.0000	0.00

TABLE II

Sample No.	Weight, gms.	Loss on ignition, %	Loss on ignition, gms.	Residue, gms.	Residue, %
1	1.0000	0.02	0.0200	0.9800	98.00
2	1.0000	0.03	0.0300	0.9700	97.00
3	1.0000	0.04	0.0400	0.9600	96.00
4	1.0000	0.05	0.0500	0.9500	95.00
5	1.0000	0.06	0.0600	0.9400	94.00
6	1.0000	0.07	0.0700	0.9300	93.00
7	1.0000	0.08	0.0800	0.9200	92.00
8	1.0000	0.09	0.0900	0.9100	91.00
9	1.0000	0.10	0.1000	0.9000	90.00
10	1.0000	0.11	0.1100	0.8900	89.00
11	1.0000	0.12	0.1200	0.8800	88.00
12	1.0000	0.13	0.1300	0.8700	87.00
13	1.0000	0.14	0.1400	0.8600	86.00
14	1.0000	0.15	0.1500	0.8500	85.00
15	1.0000	0.16	0.1600	0.8400	84.00
16	1.0000	0.17	0.1700	0.8300	83.00
17	1.0000	0.18	0.1800	0.8200	82.00
18	1.0000	0.19	0.1900	0.8100	81.00
19	1.0000	0.20	0.2000	0.8000	80.00
20	1.0000	0.21	0.2100	0.7900	79.00
21	1.0000	0.22	0.2200	0.7800	78.00
22	1.0000	0.23	0.2300	0.7700	77.00
23	1.0000	0.24	0.2400	0.7600	76.00
24	1.0000	0.25	0.2500	0.7500	75.00
25	1.0000	0.26	0.2600	0.7400	74.00
26	1.0000	0.27	0.2700	0.7300	73.00
27	1.0000	0.28	0.2800	0.7200	72.00
28	1.0000	0.29	0.2900	0.7100	71.00
29	1.0000	0.30	0.3000	0.7000	70.00
30	1.0000	0.31	0.3100	0.6900	69.00
31	1.0000	0.32	0.3200	0.6800	68.00
32	1.0000	0.33	0.3300	0.6700	67.00
33	1.0000	0.34	0.3400	0.6600	66.00
34	1.0000	0.35	0.3500	0.6500	65.00
35	1.0000	0.36	0.3600	0.6400	64.00
36	1.0000	0.37	0.3700	0.6300	63.00
37	1.0000	0.38	0.3800	0.6200	62.00
38	1.0000	0.39	0.3900	0.6100	61.00
39	1.0000	0.40	0.4000	0.6000	60.00
40	1.0000	0.41	0.4100	0.5900	59.00
41	1.0000	0.42	0.4200	0.5800	58.00
42	1.0000	0.43	0.4300	0.5700	57.00
43	1.0000	0.44	0.4400	0.5600	56.00
44	1.0000	0.45	0.4500	0.5500	55.00
45	1.0000	0.46	0.4600	0.5400	54.00
46	1.0000	0.47	0.4700	0.5300	53.00
47	1.0000	0.48	0.4800	0.5200	52.00
48	1.0000	0.49	0.4900	0.5100	51.00
49	1.0000	0.50	0.5000	0.5000	50.00
50	1.0000	0.51	0.5100	0.4900	49.00
51	1.0000	0.52	0.5200	0.4800	48.00
52	1.0000	0.53	0.5300	0.4700	47.00
53	1.0000	0.54	0.5400	0.4600	46.00
54	1.0000	0.55	0.5500	0.4500	45.00
55	1.0000	0.56	0.5600	0.4400	44.00
56	1.0000	0.57	0.5700	0.4300	43.00
57	1.0000	0.58	0.5800	0.4200	42.00
58	1.0000	0.59	0.5900	0.4100	41.00
59	1.0000	0.60	0.6000	0.4000	40.00
60	1.0000	0.61	0.6100	0.3900	39.00
61	1.0000	0.62	0.6200	0.3800	38.00
62	1.0000	0.63	0.6300	0.3700	37.00
63	1.0000	0.64	0.6400	0.3600	36.00
64	1.0000	0.65	0.6500	0.3500	35.00
65	1.0000	0.66	0.6600	0.3400	34.00
66	1.0000	0.67	0.6700	0.3300	33.00
67	1.0000	0.68	0.6800	0.3200	32.00
68	1.0000	0.69	0.6900	0.3100	31.00
69	1.0000	0.70	0.7000	0.3000	30.00
70	1.0000	0.71	0.7100	0.2900	29.00
71	1.0000	0.72	0.7200	0.2800	28.00
72	1.0000	0.73	0.7300	0.2700	27.00
73	1.0000	0.74	0.7400	0.2600	26.00
74	1.0000	0.75	0.7500	0.2500	25.00
75	1.0000	0.76	0.7600	0.2400	24.00
76	1.0000	0.77	0.7700	0.2300	23.00
77	1.0000	0.78	0.7800	0.2200	22.00
78	1.0000	0.79	0.7900	0.2100	21.00
79	1.0000	0.80	0.8000	0.2000	20.00
80	1.0000	0.81	0.8100	0.1900	19.00
81	1.0000	0.82	0.8200	0.1800	18.00
82	1.0000	0.83	0.8300	0.1700	17.00
83	1.0000	0.84	0.8400	0.1600	16.00
84	1.0000	0.85	0.8500	0	

XVII

*ABBREVIATED LATIN NAMES OF OFFICIAL DRUGS
AND PREPARATIONS ADOPTED IN THE INDEX
OF THE BRITISH PHARMACOPEIA, AND COM-
MONLY USED IN WRITING PRESCRIPTIONS.*

Abbreviated Latin Name.	Full Latin Name.
Acac. Cort.	Acaciæ Cortex
Acac. Gum.	Acaciæ Gummi
Acet. Cantharidin	Acetum Cantharidini
Acet. Scill.	Acetum Scillæ
Acet. Urgin.	Acetum Urginæ
Acid. Acet.	Acidum Aceticum
Acid. Acet. Dil.	Acidum Aceticum Dilutum
Acid. Acet. Glac.	Acidum Aceticum Glaciale
Acid. Acetylsal.	Acidum Acetylsalicylicum
Acid. Arsen.	Acidum Arseniosum
Acid. Benz.	Acidum Benzoicum
Acid. Bor.	Acidum Boricum
Acid. Carbol.	Acidum Carbolicum
Acid. Carbol. Liq.	Acidum Carbolicum Liquefactum
Acid. Chrom.	Acidum Chromicum
Acid. Cit.	Acidum Citricum
Acid. Hydriod. Dil.	Acidum Hydriodicum Dilutum
Acid. Hydrobrom. Dil. . . .	Acidum Hydrobromicum Dilutum
Acid. Hydrochl.	Acidum Hydrochloricum
Acid. Hydrochl. Dil.	Acidum Hydrochloricum Dilutum
Acid. Hydrocyan. Dil. . . .	Acidum Hydrocyanicum Dilutum
Acid. Lact.	Acidum Lacticum
Acid. Nit.	Acidum Nitricum
Acid. Nit. Dil.	Acidum Nitricum Dilutum
Acid. Nitrohydrochl. Dil. . .	Acidum Nitro-Hydrochloricum Dilutum
Acid. Oleic.	Acidum Oleicum
Acid. Phosph. Conc.	Acidum Phosphoricum Concen- tratum
Acid. Phosph. Dil.	Acidum Phosphoricum Dilutum
Acid. Pier.	Acidum Piericum
Acid. Salicyl.	Acidum Salicylicum
Acid. Sulph.	Acidum Sulphuricum
Acid. Sulph. Aromat.	Acidum Sulphuricum Aromaticum
Acid. Sulph. Dil.	Acidum Sulphuricum Dilutum

Abbreviated Latin Name.	Full Latin Name.
Acid. Sulphuros. . . .	Acidum Sulphurosum
Acid. Tann. . . .	Acidum Tannicum
Acid. Tart. . . .	Acidum Tartaricum
Acon. Rad. . . .	Aconiti Radix
Aconitin. . . .	Aconitina
Adeps Benz. . . .	Adeps Benzoatus
Adeps Lanæ Hydr. . . .	Adeps Lanæ Hydrosus
Adeps Præp. . . .	Adeps Præparatus
Adrenal. . . .	Adrenalinum
Æth. . . .	Æther
Æth. Acet. . . .	Æther Aceticus
Æth. Pur. . . .	Æther Purificatus
Agropyr. . . .	Agropyrum
Alcoh. Absol. . . .	Alcohol Absolutum
Alston. . . .	Alstonia
Alum. Exsic. . . .	Alumen Exsiccatum
Alum. Pur. . . .	Alumen Purificatum
Ammoniac. . . .	Ammoniacum
Ammon. Benz. . . .	Ammonii Benzoas
Ammon. Brom. . . .	Ammonii Bromidum
Ammon. Carb. . . .	Ammonii Carbonas
Ammon. Chlor. . . .	Ammonii Chloridum
Amygd. Amar. . . .	Amygdala Amara
Amygd. Dule. . . .	Amygdala Dulcis
Aneth. Fruct. . . .	Anethi Fructus
Anis. Fruct. . . .	Anisi Fructus
Anthem. Flor. . . .	Anthemidis Flores
Antim. Oxid. . . .	Antimonii Oxidum
Antim. Sulphur. . . .	Antimonium Sulphuratum
Antim. Tart. . . .	Antimonium Tartaratum
Apomorph. Hydrochl. . . .	Apomorphinæ Hydrochloricum
Aq. Aneth. . . .	Aqua Anethi
Aq. Anis	Aqua Anisi
Aq. Aurant. Flor. . . .	Aqua Aurantii Floris
Aq. Camph. . . .	Aqua Camphoræ
Aq. Carui	Aqua Carui
Aq. Chlorof. . . .	Aqua Chloroformi
Aq. Cinnam. . . .	Aqua Cinnamomi
Aq. Dest. . . .	Aqua Destillata
Aq. Fœnic. . . .	Aqua Fœniculi
Aq. Laurocer. . . .	Aqua Laurocerasi
Aq. Menth. Pip. . . .	Aqua Menthæ Piperitæ

APPENDICES

537

Abbreviated Latin Name.	Full Latin Name.
Aq. Menth. Vir.	Aqua Menthæ Viridis
Aq. Ros.	Aqua Rosæ
Ararob.	Araroba
Argent. Nit.	Argenti Nitras
Argent. Nit. Indur.	Argenti Nitras Induratus
Argent. Nit. Mitig.	Argenti Nitras Mitigatus
Armor. Rad.	Armoraciæ Radix
Arnic. Flor.	Arnicae Flores
Arsen. Iod.	Arsenii Iodidum
Asafet.	Asafetida
Atrop.	Atropina
Atrop. Sulph.	Atropinæ Sulphas
Aurant. Cort. Ind.	Aurantii Cortex Indicus
Aurant. Cort. Rec.	Aurantii Cortex Recens
Aurant. Cort. Sicc.	Aurantii Cortex Siccatus
Bals. Peruv.	Balsamum Peruvianum
Bals. Tolut.	Balsamum Tolutanum
Belæ Fruct.	Belæ Fructus
Bellad. Fol.	Belladonnæ Folia
Bellad. Rad.	Belladonnæ Radix
Benzamin. Lact.	Benzaminæ Lactas
Benzoin.	Benzoinum
Berber.	Berberis
Bism. Carb.	Bismuthi Carbonas
Bism. Salicyl.	Bismuthi Salicylas
Bism. Subnit.	Bismuthi Subnitras
Borax Pur.	Borax Purificatus
Buchu Fol.	Buchu Folia
Buteæ Gum.	Buteæ Gummi
Buteæ Sem.	Buteæ Semina
Butyl-Chloral Hydr.	Butyl-Chloral Hydras
Caffein.	Caffeina
Caffein. Cit.	Caffeinæ Citras
Caffein. Cit. Eff.	Caffeinæ Citras Effervescens
Calc. Carb. Præc.	Calcii Carbonas Præcipitatus
Calc. Chlor.	Calcii Chloridum
Calc. Hydr.	Calcii Hydras
Calc. Hypophosph.	Calcii Hypophosphis
Calc. Lact.	Calcii Lactas
Calc. Phosph.	Calcii Phosphas
Calumb. Rad.	Calumbæ Radix
Calx, Chlorin.	Calx Chlorinata

Abbreviated Latin Name.	Full Latin Name.
Calx. Sulphur. . . .	Calx Sulphurata
Camph.	Camphora
Cannab. Ind.	Cannabis Indica
Cantharidin	Cantharidinum
Capsic. Fruct.	Capsici Fructus
Carbo Lign.	Carbo Ligni
Carbon. Disulph. . . .	Carbonis Disulphidum
Cardam. Sem.	Cardamomi Semina
Carui Fruct.	Carui Fructus
Caryoph.	Caryophyllum
Casc. Sagr.	Cascara Sagrada
Cascarill.	Cascarilla
Cass. Fruct.	Cassie Fructus
Cass. Pulp.	Cassie Pulpa
Catech.	Catechu
Catech. Nigr.	Catechu Nigrum
Cera Alb.	Cera Alba
Cera Flav.	Cera Flava
Cetac.	Cetaceum
Chirat.	Chirata
Chloral Formam. . . .	Chloral Formamidum
Chloral Hydr.	Chloral Hydras
Chlorof.	Chloroformum
Chrysarob.	Chrysarobinum
Cinch. Rubr. Cort. . .	Cinchonæ Rubræ Cortex
Cinnam. Cort.	Cinnamomi Cortex
Cocain.	Cocaina
Cocain. Hydrochl. . .	Cocainæ Hydrochloridum
Cocc.	Coccus
Codein.	Codeina
Codein. Phosph. . . .	Codeinæ Phosphas
Colch. Corm.	Colchici Cormus
Colch. Sem.	Colchici Semina
Collod.	Collodium
Collod. Flex.	Collodium Flexile
Collod. Vescic. . . .	Collodium Vesicans
Colocyn. Pulp.	Colocynthis Pulpa
Conf. Piper.	Confectio Piperis
Conf. Ros. Gall. . . .	Confectio Rosæ Gallicæ
Conf. Senn.	Confectio Sennæ
Conf. Sulphur.	Confectio Sulphuris
Copaib.	Copaiba

Abbreviated Latin Name.	Full Latin Name.
Coriand. Fruct. . . .	Coriandri Fructus
Creosot. . . .	Creosotum
Cret. Præp. . . .	Creta Præparata
Cubeb. Fruct. . . .	Cubebæ Fructus
Cucurb. Sem. Præp. . . .	Cucurbitæ Semina Præparata
Cupr. Sulph. . . .	Cupri Sulphas
Datur. Fol. . . .	Daturæ Folia
Datur. Sem. . . .	Daturæ Semina
Dec. Acac. Cort. . . .	Decoctum Acaciæ Corticis
Dec. Agropyri. . . .	Decoctum Agropyri
Dec. Aloes Co. . . .	Decoctum Aloes Compositum
Dec. Gossyp. Rad. Cort. . . .	Decoctum Gossypii Radicis Corticis
Dec. Hæmatox. . . .	Decoctum Hæmatoxyli
Dec. Ispagh. . . .	Decoctum Ispaghulæ
Dec. Sappan	Decoctum Sappan
Diamorph. Hydrochl. . . .	Diamorphinæ Hydrochloridum
Digit. Fol. . . .	Digitalis Folia
Embel. . . .	Embelia
Emp. Bellad. . . .	Emplastrum Belladonnæ
Emp. Calefac. . . .	Emplastrum Calefaciens
Emp. Cantharidin. . . .	Emplastrum Cantharidini
Emp. Hydrarg. . . .	Emplastrum Hydrargyri
Emp. Menth. . . .	Emplastrum Menthol
Emp. Plumb. . . .	Emplastrum Plumbi
Emp. Res. . . .	Emplastrum Resinæ
Emp. Sap. . . .	Emplastrum Saponis
Ergot. . . .	Ergota
Ethyl Chlor. . . .	Ethyl Chloridum
Euonym. Cort. . . .	Euonymi Cortex
Ext. Agropyri. Liq. . . .	Extractum Agropyri Liquidum
Ext. Aloes	Extractum Aloes
Ext. Belæ Liq. . . .	Extractum Belæ Liquidum
Ext. Bellad. Liq. . . .	Extractum Belladonnæ Liquidum
Ext. Bellad. Sicc. . . .	Extractum Belladonnæ Siccum
Ext. Cannab. Ind. . . .	Extractum Cannabis Indicæ
Ext. Case. SAGR. Liq. . . .	Extractum Cascaræ Sagradæ Liquidum
Ext. Case. SAGR. Sicc. . . .	Extractum Cascaræ Sagradæ Siccum
Ext. Cinch. Liq. . . .	Extractum Cinchonæ Liquidum
Ext. Colch. . . .	Extractum Colchici

Abbreviated Latin Name.	Full Latin Name.
Ext. Coloeyn. Co. . .	Extractum Coloeynthidis Compositum
Ext. Ergot. . . .	Extractum Ergotæ
Ext. Ergot. Liq. . .	Extractum Ergotæ Liquidum
Ext. Euonym. . . .	Extractum Euonymi
Ext. Filic. Liq. . .	Extractum Filicis Liquidum
Ext. Gent.	Extractum Gentianæ
Ext. Glycyrrh. . . .	Extractum Glycyrrhizæ
Ext. Glycyrrh. Liq. .	Extractum Glycyrrhizæ Liquidum
Ext. Gossyp. Rad. Cort. Liq.	Extractum Gossypii Radicis Corticis Liquidum
Ext. Grindel. Liq. . .	Extractum Grindeliæ Liquidum
Ext. Hamam. Liq. . .	Extractum Hamamelidis Liquidum
Ext. Hydrast. Liq. . .	Extractum Hydrastis Liquidum
Ext. Hyosey. Sicc. . .	Extractum Hyoseyami Siccum
Ext. Ipecac. Liq. . .	Extractum Ipecacuanhæ Liquidum
Ext. Kavæ Liq. . . .	Extractum Kavæ Liquidum
Ext. Kramer	Extractum Krameriæ
Ext. Nuc. Vom. Liq. .	Extractum Nucis Vomiciæ Liquidum
Ext. Nuc. Vom. Sicc. .	Extractum Nucis Vomiciæ Siccum
Ext. Opii Liq. . . .	Extractum Opii Liquidum
Ext. Opii Sicc. . . .	Extractum Opii Siccum
Ext. Pierorh. Liq. . .	Extractum Pierorhizæ Liquidum
Ext. Rhei	Extractum Rhei
Ext. Strophanth. . . .	Extractum Strophanthi
Ext. Tarax.	Extractum Taraxaci
Ext. Viburn. Liq. . .	Extractum Viburni Liquidum
Fel Bov. Pur.	Fel Bovinum Purificatum
Ferr. Carb. Sacch. . .	Ferri Carbonas Saccharatus
Ferr. et Ammon. Cit. .	Ferri et Ammonii Citras
Ferr. et Pot. Tart. . .	Ferri et Potassii Tartras
Ferr. et Quin. Cit. . .	Ferri et Quininiæ Citras
Ferr. Phosph. Sacch. .	Ferri Phosphas Saccharatus
Ferr. Sulph.	Ferri Sulphas
Ferr. Sulph. Exsic. . .	Ferri Sulphas Exsiccatus
Ferr.	Ferrum
Ferr. Redact.	Ferrum Redactum
Fil. Mas	Filix Mas
Fœnic. Fruct.	Fœniculi Fructus
Gall.	Galla
Gelsem. Rad.	Gelsemii Radix

APPENDICES

541

Abbreviated Latin Name.	Full Latin Name.
Gent. Rad.	Gentianæ Radix
Glucos.	Glucosum
Glycer.	Glycerinum
Glycer. Acid. Bor. . . .	Glycerinum Acidi Borici
Glycer. Acid. Carbol. . .	Glycerinum Acidi Carbolici
Glycer. Acid. Tann. . . .	Glycerinum Acidi Tannici
Glycer. Alum.	Glycerinum Aluminis
Glycer. Amyli	Glycerinum Amyli
Glycer. Borac.	Glycerinum Boracis
Glycer. Pepsin.	Glycerinum Pepsini
Glycer. Plumb. Subacet. .	Glycerinum Plumbi Subacetatis
Glycer. Trag.	Glycerinum Tragacanthæ
Glycyrrh. Rad.	Glycyrrhizæ Radix
Gossyp. Rad. Cort. . . .	Gossypii Radicis Cortex
Gossyp.	Gossypium
Grindel.	Grindelia
Guaiac. Lign.	Guaiaci Lignum
Guaiac. Res.	Guaiaci Resina
Guaiacol Carb.	Guaiacol Carbonas
Gum. Ind.	Gummi Indicum
Hæmatox. Lign.	Hæmatoxyli Lignum
Hamam. Cort.	Hamamelidis Cortex
Hamam. Fol.	Hamamelidis Folia
Homatrop. Hydrobrom. . .	Homatropinæ Hydrobromidum
Hydrarg. Iod. Rubr. . . .	Hydrargyri Iodidum Rubrum
Hydrarg. Oxid. Flav. . . .	Hydrargyri Oxidum Flavum
Hydrarg. Oxid. Rubr. . . .	Hydrargyri Oxidum Rubrum
Hydrarg. Perchlor. . . .	Hydrargyri Perchloridum
Hydrarg. Subchlor. . . .	Hydrargyri Subchloridum
Hydrarg.	Hydrargyrum
Hydrarg. Ammon.	Hydrargyrum Ammoniatum
Hydrarg. c. Cret.	Hydrargyrum cum Creta
Hydrarg. Oleat.	Hydrargyrum Oleatum
Hydrast. Rhiz.	Hydrastis Rhizoma
Hyoscin. Hydrobrom. . . .	Hyoscinæ Hydrobromidum
Hyoscy. Fol.	Hyoscyami Folia
Hyoscyamin. Sulph. . . .	Hyoscyaminæ Sulphas
Inf. Alston	Infusum Alsoniæ
Inf. Aurant.	Infusum Aurantii
Inf. Aurant. Co.	Infusum Aurantii Compositum
Inf. Buchu	Infusum Buchu
Inf. Calumb.	Infusum Calumbæ

1. ...	...
2. ...	...
3. ...	...
4. ...	...
5. ...	...
6. ...	...
7. ...	...
8. ...	...
9. ...	...
10. ...	...
11. ...	...
12. ...	...
13. ...	...
14. ...	...
15. ...	...
16. ...	...
17. ...	...
18. ...	...
19. ...	...
20. ...	...
21. ...	...
22. ...	...
23. ...	...
24. ...	...
25. ...	...
26. ...	...
27. ...	...
28. ...	...
29. ...	...
30. ...	...
31. ...	...
32. ...	...
33. ...	...
34. ...	...
35. ...	...
36. ...	...
37. ...	...
38. ...	...
39. ...	...
40. ...	...
41. ...	...
42. ...	...
43. ...	...
44. ...	...
45. ...	...
46. ...	...
47. ...	...
48. ...	...
49. ...	...
50. ...	...
51. ...	...
52. ...	...
53. ...	...
54. ...	...
55. ...	...
56. ...	...
57. ...	...
58. ...	...
59. ...	...
60. ...	...
61. ...	...
62. ...	...
63. ...	...
64. ...	...
65. ...	...
66. ...	...
67. ...	...
68. ...	...
69. ...	...
70. ...	...
71. ...	...
72. ...	...
73. ...	...
74. ...	...
75. ...	...
76. ...	...
77. ...	...
78. ...	...
79. ...	...
80. ...	...
81. ...	...
82. ...	...
83. ...	...
84. ...	...
85. ...	...
86. ...	...
87. ...	...
88. ...	...
89. ...	...
90. ...	...
91. ...	...
92. ...	...
93. ...	...
94. ...	...
95. ...	...
96. ...	...
97. ...	...
98. ...	...
99. ...	...
100. ...	...

Abbreviated Latin Name.	Full Latin Name.
Inf. Caryoph. . . .	Infusum Caryophylli
Inf. Cascarill. . . .	Infusum Cascarillæ
Inf. Chirat. . . .	Infusum Chiratæ
Inf. Cinch. Acid . . .	Infusum Cinchonæ Acidum
Inf. Digit. . . .	Infusum Digitalis
Inf. Ergot. . . .	Infusum Ergotæ
Inf. Gent. Co. . . .	Infusum Gentianæ Compositum
Inf. Kramer. . . .	Infusum Krameria
Inf. Quass. . . .	Infusum Quassia
Inf. Rhei	Infusum Rhei
Inf. Ros. Acid. . . .	Infusum Rosæ Acidum
Inf. Scopar. . . .	Infusum Scoparii
Inf. Seneg. . . .	Infusum Senegæ
Inf. Senn. . . .	Infusum Sennæ
Inf. Uv. Urs. . . .	Infusum Uvæ Ursi
Inject. Apomorph. Hyp.	Injectio Apomorphinæ Hypoder- mica
Inject. Cocain. Hyp. . .	Injectio Cocainæ Hypodermica
Inject. Ergot. Hyp. . .	Injectio Ergotæ Hypodermica
Inject. Morph. Hyp. . .	Injectio Morphinæ Hypodermica
Inject. Strych. Hyp. . .	Injectio Strychninæ Hypodermica
Iodof. . . .	Iodoformum
Ipecac. Rad. . . .	Ipecacuanhæ Radix
Ipom. Rad. . . .	Ipomœæ Radix
Ispagh	Ispaghula
Jalap. . . .	Jalapa
Jalap. Ras. . . .	Jalapæ Resinæ
Kalad. . . .	Kaladana
Kalad. Res. . . .	Kaladanæ Resina
Kavæ Rhiz. . . .	Kavæ Rhizoma
Kino Eucalyp. . . .	Kino Eucalypti
Kramer. Rad. . . .	Krameria Radix
Lam. Atrop. . . .	Lamellæ Atropinæ
Lam. Cocain. . . .	Lamellæ Cocainæ
Lam. Homatrop. . . .	Lamellæ Homatropinæ
Lam. Physostig. . . .	Lamellæ Physostigminæ
Laurocer. Fol. . . .	Laurocerasi Folia
Limon. Cort. . . .	Limonis Cortex
Lini Sem. . . .	Lini Semina
Lini Sem. Contus. . . .	Lini Semina Contusa
Lin. Acon. . . .	Linimentum Aconiti
Lin. Ammon. . . .	Linimentum Ammonia

INDEX

Admiral	1
Admiral	2
Admiral	3
Admiral	4
Admiral	5
Admiral	6
Admiral	7
Admiral	8
Admiral	9
Admiral	10
Admiral	11
Admiral	12
Admiral	13
Admiral	14
Admiral	15
Admiral	16
Admiral	17
Admiral	18
Admiral	19
Admiral	20
Admiral	21
Admiral	22
Admiral	23
Admiral	24
Admiral	25
Admiral	26
Admiral	27
Admiral	28
Admiral	29
Admiral	30
Admiral	31
Admiral	32
Admiral	33
Admiral	34
Admiral	35
Admiral	36
Admiral	37
Admiral	38
Admiral	39
Admiral	40
Admiral	41
Admiral	42
Admiral	43
Admiral	44
Admiral	45
Admiral	46
Admiral	47
Admiral	48
Admiral	49
Admiral	50
Admiral	51
Admiral	52
Admiral	53
Admiral	54
Admiral	55
Admiral	56
Admiral	57
Admiral	58
Admiral	59
Admiral	60
Admiral	61
Admiral	62
Admiral	63
Admiral	64
Admiral	65
Admiral	66
Admiral	67
Admiral	68
Admiral	69
Admiral	70
Admiral	71
Admiral	72
Admiral	73
Admiral	74
Admiral	75
Admiral	76
Admiral	77
Admiral	78
Admiral	79
Admiral	80
Admiral	81
Admiral	82
Admiral	83
Admiral	84
Admiral	85
Admiral	86
Admiral	87
Admiral	88
Admiral	89
Admiral	90
Admiral	91
Admiral	92
Admiral	93
Admiral	94
Admiral	95
Admiral	96
Admiral	97
Admiral	98
Admiral	99
Admiral	100

APPENDICES

543

Abbreviated Latin Name.	Full Latin Name.
Lin. Bellad. . . .	Linimentum Belladonnæ
Lin. Calc.	Linimentum Calcis
Lin. Camph.	Linimentum Camphoræ
Lin. Camph. Ammon. . .	Linimentum Camphoræ Ammonia- tum
Lin. Chlorof.	Linimentum Chloroformi
Lin. Croton	Linimentum Crotonis
Lin. Hydrarg.	Linimentum Hydrargyri
Lin. Opii	Linimentum Opii
Lin. Pot. Iod. c. Sap. .	Linimentum Potassii Iodidi cum Sapone
Lin. Sap.	Linimentum Saponis
Lin. Sinap.	Linimentum Sinapis
Lin. Tereb.	Linimentum Terebinthiæ
Lin. Tereb. Acet. . . .	Linimentum Terebinthiæ Aceti- cum
Liq. Acid. Chrom. . . .	Liquor Acidi Chromici
Liq. Adrenal. Hydrochl. .	Liquor Adrenalini Hydrochloricus
Liq. Ammon.	Liquor Ammoniaæ
Liq. Ammon. Fort. . . .	Liquor Ammoniaæ Fortis
Liq. Ammon. Acet. . . .	Liquor Ammonii Acetatis
Liq. Ammon. Cit.	Liquor Ammonii Citratis
Liq. Arsen.	Liquor Arsenicalis
Liq. Arsen. Hydrochl. . .	Liquor Arsenici Hydrochloricus
Liq. Arsen. et Hydrarg. .	Liquor Arsenii et Hydrargyri Iodidi
Liq. Atrop. Sulph. . . .	Liquor Atropinæ Sulphatis
Liq. Bism. et Ammon. . .	Liquor Bismuthi et Ammonii Cit- ratis
Liq. Calcis	Liquor Calcis
Liq. Calcis Chlorin. . . .	Liquor Calcis Chlorinataæ
Liq. Calcis Sacch. . . .	Liquor Calcis Saccharatus
Liq. Cresol. Sap.	Liquor Cresolis Saponatus
Liq. Epispast.	Liquor Epispasticus
Liq. Ethyl Nitrit.	Liquor Ethyl Nitritis
Liq. Ferr. Perchlor. . . .	Liquor Ferri Perchloridi
Liq. Ferr. Perchlor. Fort. .	Liquor Ferri Perchloridi Fortis
Liq. Ferr. Persulph. . . .	Liquor Ferri Persulphatis
Liq. Formaldehyd.	Liquor Formaldehydi
Liq. Formaldehyd. Sap. . .	Liquor Formaldehydi Saponatus
Liq. Hamam.	Liquor Hamamelidis
Liq. Hydrarg. Nit. Acid. .	Liquor Hydrargyri Nitratæ Acidus

Abbreviated Latin Name.	Full Latin Name.
Liq. Hydrarg. Perchlor. .	Liquor Hydrargyri Perchloridi
Liq. Hydrarg. Perox. .	Liquor Hydrogenii Peroxidi
Liq. Mag. Bicarb. .	Liquor Magnesii Bicarbonatis
Liq. Morph. Acet. .	Liquor Morphinae Acetatis
Liq. Morph. Hydrochl. .	Liquor Morphinae Hydrochloridi
Liq. Morph. Tart. .	Liquor Morphinae Tartratis
Liq. Pancreat. .	Liquor Pancreatis
Liq. Pic. Carbon. .	Liquor Picis Carbonis
Liq. Plumbi Subacet. Dil.	Liquor Plumbi Subacetatis Dilutus
Liq. Plumbi Subacet. Fort.	Liquor Plumbi Subacetatis Fortis
Liq. Potass. .	Liquor Potassæ
Liq. Pot. Permang. .	Liquor Potassii Permanganatis
Liq. Sodæ Chlorin. .	Liquor Sodæ Chlorinatæ
Liq. Sod. Arsen. .	Liquor Sodii Arsenatis
Liq. Strych. Hydrochl. .	Liquor Strychninae Hydrochloridi
Liq. Trinitrin. .	Liquor Trinitrini
Liq. Zinc. Chlor. .	Liquor Zinci Chloridi
Lith. Carb. .	Lithii Carbonas
Lith. Cit. .	Lithii Citras
Lith. Cit. Eff. .	Lithii Citras Effervescens
Lobel. .	Lobelia
Lot. Hydrarg. Flav. .	Lotio Hydrargyri Flava
Lot. Hydrarg. Nigr. .	Lotio Hydrargyri Nigra
Mag. Lev. .	Magnesia Levis
Mag. Pond. .	Magnesia Ponderosa
Mag. Carb. Lev. .	Magnesii Carbonas Levis
Mag. Carb. Pond. .	Magnesii Carbonas Ponderosus
Mag. Sulph. .	Magnesii Sulphas
Mag. Sulph. Eff. .	Magnesii Sulphas Effervescens
Mel Borac. .	Mel Boracis
Mel Depur. .	Mel Depuratum
Mist. Ammoniac. .	Mistura Ammoniaci
Mist. Amygd. .	Mistura Amygdalæ
Mist. Cret. .	Mistura Cretæ
Mist. Ferr. Co. .	Mistura Ferri Composita
Mist. Guaiac. .	Mistura Guaiaci
Mist. Ol. Ricin. .	Mistura Olei Ricini
Mist. Senn. Co. .	Mistura Sennæ Composita
Morph. Acet. .	Morphinae Acetas
Morph. Hydrochl. .	Morphinae Hydrochloridum
Morph. Tart. .	Morphinae Tartras
Mucil. Acac. .	Mucilago Acaciæ

APPENDICES

545

Abbreviated Latin Name.	Full Latin Name.
Mucil. Gum. Ind. . . .	Mucilago Gummi Indici
Mucil. Trag. . . .	Mucilago Tragacanthæ
Myrist. . . .	Myristica
Myrobal. . . .	Myrobalanum
Myrrh. . . .	Myrrha
Nux Vom. . . .	Nux Vomica
Ol. Abiet. . . .	Oleum Abietis
Ol. Ajowan	Oleum Ajowan
Ol. Amygd. . . .	Oleum Amygdalæ
Ol. Aneth. . . .	Oleum Anethi
Ol. Anis. . . .	Oleum Anisi
Ol. Anthem. . . .	Oleum Anthemidis
Ol. Arach. . . .	Oleum Arachis
Ol. Cadin. . . .	Oleum Cadinum
Ol. Cajup. . . .	Oleum Cajuputi
Ol. Carui	Oleum Carui
Ol. Caryoph. . . .	Oleum Caryophylli
Ol. Chaulmoog. . . .	Oleum Chaulmoogræ
Ol. Cinna m. . . .	Oleum Cinnamomi
Ol. Copaib. . . .	Oleum Copaibæ
Ol. Coriand. . . .	Oleum Coriandri
Ol. Croton. . . .	Oleum Crotonis
Ol. Cubeb. . . .	Oleum Cubebæ
Ol. Eucalyp. . . .	Oleum Eucalypti
Ol. Gaulth. . . .	Oleum Gualtheriæ
Ol. Gram. Citrat. . . .	Oleum Graminis Citrati
Ol. Junip. . . .	Oleum Juniperi
Ol. Lavand. . . .	Oleum Lavandulæ
Ol. Limon. . . .	Oleum Limonis
Ol. Lini	Oleum Lini
Ol. Menth. Pip. . . .	Oleum Menthæ Piperitæ
Ol. Menth. Vir. . . .	Oleum Menthæ Viridis
Ol. Morr. . . .	Oleum Morrhue
Ol. Myrist. . . .	Oleum Myristicæ
Ol. Oliv. . . .	Oleum Olivæ
Ol. Phosphor. . . .	Oleum Phosphoratum
Ol. Ricin. . . .	Oleum Ricini
Ol. Ros. . . .	Oleum Rosæ
Ol. Rosmarin. . . .	Oleum Rosmarini
Ol. Santal. . . .	Oleum Santali
Ol. Sesam. . . .	Oleum Sesami
Ol. Sinap. Vol. . . .	Oleum Sinapis Volatile

NN

CONTENTS

Introduction	1
Chapter I	10
Chapter II	20
Chapter III	30
Chapter IV	40
Chapter V	50
Chapter VI	60
Chapter VII	70
Chapter VIII	80
Chapter IX	90
Chapter X	100
Chapter XI	110
Chapter XII	120
Chapter XIII	130
Chapter XIV	140
Chapter XV	150
Chapter XVI	160
Chapter XVII	170
Chapter XVIII	180
Chapter XIX	190
Chapter XX	200
Chapter XXI	210
Chapter XXII	220
Chapter XXIII	230
Chapter XXIV	240
Chapter XXV	250
Chapter XXVI	260
Chapter XXVII	270
Chapter XXVIII	280
Chapter XXIX	290
Chapter XXX	300
Chapter XXXI	310
Chapter XXXII	320
Chapter XXXIII	330
Chapter XXXIV	340
Chapter XXXV	350
Chapter XXXVI	360
Chapter XXXVII	370
Chapter XXXVIII	380
Chapter XXXIX	390
Chapter XL	400
Chapter XLI	410
Chapter XLII	420
Chapter XLIII	430
Chapter XLIV	440
Chapter XLV	450
Chapter XLVI	460
Chapter XLVII	470
Chapter XLVIII	480
Chapter XLIX	490
Chapter L	500
Chapter LI	510
Chapter LII	520
Chapter LIII	530
Chapter LIV	540
Chapter LV	550
Chapter LVI	560
Chapter LVII	570
Chapter LVIII	580
Chapter LIX	590
Chapter LX	600
Chapter LXI	610
Chapter LXII	620
Chapter LXIII	630
Chapter LXIV	640
Chapter LXV	650
Chapter LXVI	660
Chapter LXVII	670
Chapter LXVIII	680
Chapter LXIX	690
Chapter LXX	700
Chapter LXXI	710
Chapter LXXII	720
Chapter LXXIII	730
Chapter LXXIV	740
Chapter LXXV	750
Chapter LXXVI	760
Chapter LXXVII	770
Chapter LXXVIII	780
Chapter LXXIX	790
Chapter LXXX	800
Chapter LXXXI	810
Chapter LXXXII	820
Chapter LXXXIII	830
Chapter LXXXIV	840
Chapter LXXXV	850
Chapter LXXXVI	860
Chapter LXXXVII	870
Chapter LXXXVIII	880
Chapter LXXXIX	890
Chapter LXXXX	900
Chapter LXXXXI	910
Chapter LXXXXII	920
Chapter LXXXXIII	930
Chapter LXXXXIV	940
Chapter LXXXXV	950
Chapter LXXXXVI	960
Chapter LXXXXVII	970
Chapter LXXXXVIII	980
Chapter LXXXXIX	990
Chapter LXXXXX	1000

Abbreviated Latin Name.	Full Latin Name.
Ol. Tereb. Rectif. . . .	Oleum Terebinthinæ Rectificatum
Ol. Theobrom. . . .	Oleum Theobromatis
Oliver. Cort. . . .	Oliveri Cortex
Oxymel Scill. . . .	Oxymel Scillæ
Oxymel Urgin. . . .	Oxymel Urgineæ
Paraff. Dur. . . .	Paraffinum Durum
Paraff. Liq. . . .	Paraffinum Liquidum
Paraff. Moll. . . .	Paraffinum Molle
Pellet. Tann. . . .	Pelletierinæ Tannas
Pepsin. . . .	Pepsinum
Phenacet. . . .	Phenacetinum
Phosphor. . . .	Phosphorus
Physostig. Sulph. . . .	Physostigminæ Sulphas
Pierorh. . . .	Pierorhiza
Pilocarp. Nit. . . .	Pilocarpinæ Nitras
Pil. Aloes	Pilula Aloes
Pil. Aloes et Asafet. . . .	Pilula Aloes et Asafetidæ
Pil. Aloes et Ferr. . . .	Pilula Aloes et Ferri
Pil. Aloes et Myrrh. . . .	Pilula Aloes et Myrrhæ
Pil. Colocyn. Co. . . .	Pilula Colocynthis Composita
Pil. Colocyn. et Hyoscy. . . .	Pilula Colocynthis et Hyoscyami
Pil. Ferr. . . .	Pilula Ferri
Pil. Hydrarg. . . .	Pilula Hydrargyri
Pil. Hydrarg. Subchlor. Co. . . .	Pilula Hydrargyri Subchloridi Composita
Pil. Ipecac. c. Scill. . . .	Pilula Ipecacuanhæ cum Scilla
Pil. Ipecac. c. Urgin. . . .	Pilula Ipecacuanhæ cum Urginea
Pil. Phosphor. . . .	Pilula Phosphori
Pil. Plumb. c. Opio	Pilula Plumbi cum Opio
Pil. Quin. Sulph. . . .	Pilula Quininae Sulphatis
Pil. Rhei Col. . . .	Pilula Rhei Composita
Pil. Sap. Co. . . .	Pilula Saponis Composita
Pil. Scill. Co. . . .	Pilula Scillæ Composita
Pil. Urgin. Co. . . .	Pilula Urgineæ Composita
Pix Carbon. Præp. . . .	Pix Carbonis Præparata
Pix Liq. . . .	Pix Liquida
Plumb. Acet. . . .	Plumbi Acetas
Plumb. Iod. . . .	Plumbi Acetas
Plumb. Iod. . . .	Plumbi Iodidum
Plumb. Oxid. . . .	Plumbi Oxidum
Podoph. Ind. Res. . . .	Podophylli Indici Resina
Podoph. Ind. Rhiz. . . .	Podophylli Indici Rhizoma

APPENDIX B

100

1. ...	...
2. ...	...
3. ...	...
4. ...	...
5. ...	...
6. ...	...
7. ...	...
8. ...	...
9. ...	...
10. ...	...
11. ...	...
12. ...	...
13. ...	...
14. ...	...
15. ...	...
16. ...	...
17. ...	...
18. ...	...
19. ...	...
20. ...	...
21. ...	...
22. ...	...
23. ...	...
24. ...	...
25. ...	...
26. ...	...
27. ...	...
28. ...	...
29. ...	...
30. ...	...
31. ...	...
32. ...	...
33. ...	...
34. ...	...
35. ...	...
36. ...	...
37. ...	...
38. ...	...
39. ...	...
40. ...	...
41. ...	...
42. ...	...
43. ...	...
44. ...	...
45. ...	...
46. ...	...
47. ...	...
48. ...	...
49. ...	...
50. ...	...
51. ...	...
52. ...	...
53. ...	...
54. ...	...
55. ...	...
56. ...	...
57. ...	...
58. ...	...
59. ...	...
60. ...	...
61. ...	...
62. ...	...
63. ...	...
64. ...	...
65. ...	...
66. ...	...
67. ...	...
68. ...	...
69. ...	...
70. ...	...
71. ...	...
72. ...	...
73. ...	...
74. ...	...
75. ...	...
76. ...	...
77. ...	...
78. ...	...
79. ...	...
80. ...	...
81. ...	...
82. ...	...
83. ...	...
84. ...	...
85. ...	...
86. ...	...
87. ...	...
88. ...	...
89. ...	...
90. ...	...
91. ...	...
92. ...	...
93. ...	...
94. ...	...
95. ...	...
96. ...	...
97. ...	...
98. ...	...
99. ...	...
100. ...	...

Abbreviated Latin Name.	Full Latin Name.
Podoph. Res. . . .	Podophylli Resina
Podoph. Rhiz. . . .	Podophylli Rhizoma
Potass. Caust. . . .	Potassa Caustica
Potass. Sulphur. . . .	Potassa Sulphurata
Pot. Acet.	Potassii Acetas
Pot. Bicarb.	Potassi Bicarbonas
Pot. Bichrom.	Potassii Bichromas
Pot. Brom.	Potassi Bromidum
Pot. Carb.	Potassii Carbonas
Pot. Chloras	Potassii Chloras
Pot. Cit.	Potassii Citras
Pot. Iod.	Potassii Iodidum
Pot. Nit.	Potassii Nitras
Pot. Permang.	Potassii Permanganas
Pot. Sulph.	Potassii Sulphas
Pot. Tart.	Potassii Tartras
Pot. Tart. Acid.	Potassii Tartras Acidus
Prun. Virgin. Cort.	Pruni Virginianæ Cortex
Pterocarp. Lign.	Pterocarpi Lignum
Pulv. Amygd. Co.	Pulvis Amygdalæ Compositus
Pulv. Antim.	Pulvis Antimonialis
Pulv. Buteæ Sem.	Pulvis Buteæ Seminum
Pulv. Catech. Co.	Pulvis Catechu Compositus
Pulv. Cinnam. Co.	Pulvis Cinnamomi Compositus
Pulv. Cret. Aromat.	Pulvis Cretæ Aromaticus
Pulv. Cret. Aromat. c.	Pulvis Cretæ Aromaticus cum
Opio	Opio
Pulv. Glycyrrh. Co.	Pulvis Glycyrrhizæ Compositus
Pulv. Ipecac. Co.	Pulvis Ipecacuanhæ Compositus
Pulv. Jalap. Co.	Pulvis Jalapæ Compositus
Pulv. Kalad. Co.	Pulvis Kaladanæ Compositus
Pulv. Kino Co.	Pulvis Kino Compositus
Pulv. Opii Co.	Pulvis Opii Compositus
Pulv. Rhei Co.	Pulvis Rhei Compositus
Pulv. Scammon. Co.	Pulvis Scammonia Compositus
Pulv. Sodæ Tart. Eff.	Pulvis Sodæ Tartarata Efferves-
	cens
Pulv. Trag. Co.	Pulvis Tragacanthæ Compositus
Pyreth. Rad.	Pyrethri Radix
Quass. Lign.	Quassia Lignum
Quill. Cort.	Quillaia Cortex
Quin. Hydrochl.	Quinina Hydrochloridum

Abraham Lincoln	101
Adams, John	102
Adams, Samuel	103
Adams, Thomas	104
Adams, William	105
Adams, John Quincy	106
Adams, John C.	107
Adams, John W.	108
Adams, John M.	109
Adams, John A.	110
Adams, John B.	111
Adams, John C.	112
Adams, John D.	113
Adams, John E.	114
Adams, John F.	115
Adams, John G.	116
Adams, John H.	117
Adams, John I.	118
Adams, John J.	119
Adams, John K.	120
Adams, John L.	121
Adams, John M.	122
Adams, John N.	123
Adams, John O.	124
Adams, John P.	125
Adams, John Q.	126
Adams, John R.	127
Adams, John S.	128
Adams, John T.	129
Adams, John U.	130
Adams, John V.	131
Adams, John W.	132
Adams, John X.	133
Adams, John Y.	134
Adams, John Z.	135
Adams, John A.	136
Adams, John B.	137
Adams, John C.	138
Adams, John D.	139
Adams, John E.	140
Adams, John F.	141
Adams, John G.	142
Adams, John H.	143
Adams, John I.	144
Adams, John J.	145
Adams, John K.	146
Adams, John L.	147
Adams, John M.	148
Adams, John N.	149
Adams, John O.	150
Adams, John P.	151
Adams, John Q.	152
Adams, John R.	153
Adams, John S.	154
Adams, John T.	155
Adams, John U.	156
Adams, John V.	157
Adams, John W.	158
Adams, John X.	159
Adams, John Y.	160
Adams, John Z.	161
Adams, John A.	162
Adams, John B.	163
Adams, John C.	164
Adams, John D.	165
Adams, John E.	166
Adams, John F.	167
Adams, John G.	168
Adams, John H.	169
Adams, John I.	170
Adams, John J.	171
Adams, John K.	172
Adams, John L.	173
Adams, John M.	174
Adams, John N.	175
Adams, John O.	176
Adams, John P.	177
Adams, John Q.	178
Adams, John R.	179
Adams, John S.	180
Adams, John T.	181
Adams, John U.	182
Adams, John V.	183
Adams, John W.	184
Adams, John X.	185
Adams, John Y.	186
Adams, John Z.	187
Adams, John A.	188
Adams, John B.	189
Adams, John C.	190
Adams, John D.	191
Adams, John E.	192
Adams, John F.	193
Adams, John G.	194
Adams, John H.	195
Adams, John I.	196
Adams, John J.	197
Adams, John K.	198
Adams, John L.	199
Adams, John M.	200

Abbreviated Latin Name.	Full Latin Name.
Quin. Hydrochl. Acid.	Quininæ Hydrochloridum Acidum
Quin. Sulph.	Quininæ Sulphas
Res.	Resina.
Rhei Rad.	Rhei Radix
Rhœad. Pet.	Rhœados Petala
Ros. Gall. Pet.	Rosæ Gallicæ Petala
Sacch. Lact.	Saccharum Lactis
Sacch. Pur.	Saccharum Purificatum
Santonin.	Santoninum
Sap. Animal.	Sapo Animalis
Sap. Dur.	Sapo Durus
Sap. Moll.	Sapo Mollis
Scammon. Rad.	Scammoniae Radix
Scammon. Res.	Scammoniae Resina
Scill.	Scilla
Scopar. Cacum.	Scoparii Cacumina
Seneg. Rad.	Senegæ Radix
Senn. Fol.	Sennæ Folia
Senn. Fruct.	Sennæ Fructus
Serpent. Rhiz.	Serpentariæ Rhizoma
Sev. Benz.	Sevum Benzoatum
Sev. Præp.	Sevum Præparatum
Sod. Arsen. Anhydr.	Sodii Arsenas Anhydrosus
Sod. Benz.	Sodii Benzoas
Sod. Bicarb.	Sodii Bicarbonas
Sod. Brom.	Sodii Bromidum
Sod. Carb.	Sodii Carbonas
Sod. Carb. Exsic.	Sodii Carbonas Exsiccatas
Sod. Chlor.	Sodii Chloridum
Sod. Citro-Tart. Eff.	Sodii Citro-Tartras Effervescens
Sod. et Pot. Tart.	Sodii et Potassii Tartras
Sod. Hypophosph.	Sodii Hypophosphis
Sod. Iod.	Sodii Iodidum
Sod. Nitris	Sodii Nitris
Sod. Phosph.	Sodii Phosphas
Sod. Phosph. Acid.	Sodii Phosphas Acidus
Sod. Phosph. Eff.	Sodii Phosphas Effervescens
Sod. Salicyl.	Sodii Salicylas
Sod. Sulph.	Sodii Sulphas
Sod. Sulph. Eff.	Sodii Sulphas Effervescens
Sod. Sulphis	Sodii Sulphis
Sp. Æth.	Spiritus Ætheris

Abbreviated Latin Name.	Full Latin Name.
Sp. Æth. Nitros. . .	Spiritus Ætheris Nitrosi
Sp. Ammon. Aromat. . .	Spiritus Ammoniae Aromaticus
Sp. Ammon. Fet. . .	Spiritus Ammoniae Fetidus
Sp. Anis. . .	Spiritus Anisi
Sp. Armor. Co. . .	Spiritus Armoraciae Compositus
Sp. Cajup. . .	Spiritus Cajuputi
Sp. Camph. . .	Spiritus Camphoræ
Sp. Chlorof. . .	Spiritus Chloroformi
Sp. Cinnam. . .	Spiritus Cinnamomi
Sp. Junip. . .	Spiritus Juniperi
Sp. Lavand. . .	Spiritus Lavandulæ
Sp. Menth. Pip. . .	Spiritus Menthæ Piperitæ
Sp. Myrist. . .	Spiritus Myristicæ
Sp. Rectif. . .	Spiritus Rectificatus
Sp. Rosmarin. . .	Spiritus Rosmarini
Staphisag. Sem. . .	Staphisagriae Semina
Stramon. Fol. . .	Stramonii Folia
Stramon. Sem. . .	Stramonii Semina
Stront. Brom. . .	Strontii Bromidum
Strophanth. Sem. . .	Strophanthi Semina
Strych. . .	Strychnina
Strych. Hydrochl. . .	Strychninae Hydrochloridum
Styrax Præp. . .	Styrax Præparatus
Succ. Limon. . .	Succus Limonis
Succ. Scopar. . .	Succus Scoparii
Succ. Tarax. . .	Succus Taraxaci
Sulphur Præc. . .	Sulphur Præcipitatum
Sulphur Sublim. . .	Sulphur Sublimatum
Supp. Acid. Carbol. . .	Suppositoria Acidi Carbolici
Supp. Acid. Tann. . .	Suppositoria Acidi Tannici
Supp. Bellad. . .	Suppositoria Belladonnae
Supp. Glycer. . .	Suppositoria Glycerini
Supp. Iodof. . .	Suppositoria Iodoförmi
Supp. Morph. . .	Suppositoria Morphinae
Supp. Plumb. Co. . .	Suppositoria Plumbi Composita
Syr. . .	Syrupus
Syr. Acid. Hydriod. . .	Syrupus Acidi Hydiiodici
Syr. Aromat. . .	Syrupus Aromaticus
Sry. Aurant. . .	Syrupus Aurantii
Syr. Aurant. Flor. . .	Syrupus Aurantii Floris
Syr. Calc. Lactophosph. . .	Syrupus Calcii Lactophosphatis
Syr. Casc. Aromat. . .	Syrupus Cascaræ Aromaticus

Abbreviated Latin Name.	Full Latin Name.
Syr. Chloral	Syrupus Chloral
Syr. Codein. Phosph. . .	Syrupus Codeinæ Phosphatis
Syr. Ferr. Iod. . . .	Syrupus Ferri Iodidi
Syr. Ferr. Phosph. . . .	Syrupus Ferri Phosphatis
Syr. Ferr. Phosph. c. Quin. et Strych.	Syrupus Ferri Phosphatis cum Quininae et Strychninae
Syr. Glucos.	Syrupus Glucosi
Syr. Limon.	Syrupus Limonis
Syr. Prun. Virgin. . . .	Syrupus Pruni Virginianæ
Syr. Rhei	Syrupus Rhei
Syr. Rhœad.	Syrupus Rhœados
Syr. Ros.	Syrupus Rosæ
Syr. Scill.	Syrupus Scillæ
Syr. Senn.	Syrupus Sennæ
Syr. Tolut.	Syrupus Tolutanus
Syr. Urgin.	Syrupus Urgineæ
Syr. Zingib.	Syrupus Zingiberis
Tab. Trinitrin.	Tabellæ Trinitrini
Tarax. Rad.	Taraxaci Radix
Tereb. Canad.	Terebinthina Canadensis
Theobrom. et Sod. Salicyl.	Theobrominae et Sodii Salicylas
Thyroid. Sicc.	Thyroideum Siccum
Tr. Acon.	Tinctura Aconiti
Tr. Alston.	Tinctura Alstoniæ
Tr. Arnic. Flor.	Tinctura Arnicæ Florum
Tr. Asafet.	Tinctura Asafetidæ
Tr. Aurant.	Tinctura Aurantii
Tr. Bellad.	Tinctura Belladonnæ
Tr. Benzoin Co.	Tinctura Benzoini Composita
Tr. Berber.	Tinctura Berberidis
Tr. Buchu	Tinctura Buchu
Tr. Calumb.	Tinctura Calumbæ
Tr. Camph. Co.	Tinctura Camphoræ Composita
Tr. Cannab. Ind.	Tinctura Cannabis Indicæ
Tr. Cantharidin.	Tinctura Cantharidini
Tr. Capsic.	Tinctura Capsici
Tr. Cardam. Co.	Tinctura Cardamomi Composita
Tr. Cascarill.	Tinctura Cascarillæ
Tr. Catech.	Tinctura Catechu
Tr. Chirat.	Tinctura Chiratæ
Tr. Chlorof. et Morph. Co.	Tinctura Chloroformi et Morphinae Composita

APPENDICES

551

Abbreviated Latin Name.	Full Latin Name.
Tr. Cinch. . . .	Tinctura Cinchonæ
Tr. Cinch. Co. . . .	Tinctura Cinchonæ Composita
Tr. Cinnam. . . .	Tinctura Cinnamomi
Tr. Cocc. . . .	Tinctura Cocci
Tr. Colch. . . .	Tinctura Colchici
Tr. Cubeb. . . .	Tinctura Cubebæ
Tr. Datur. Sem. . . .	Tinctura Daturæ Seminum
Tr. Digit. . . .	Tinctura Digitalis
Tr. Ergot. Ammon. . . .	Tinctura Ergotæ Ammoniata
Tr. Ferr. Perchlor. . . .	Tinctura Ferri Perchloridi
Tr. Gelsem. . . .	Tinctura Gelsemii
Tr. Gent. Co. . . .	Tinctura Gentianæ Composita
Tr. Guaiac. Ammon. . . .	Tinctura Guaiaci Ammoniata
Tr. Hamam. . . .	Tinctura Hamamelidis
Tr. Hydrast. . . .	Tinctura Hydrastis
Tr. Hyoscy. . . .	Tinctura Hyoscyami
Tr. Iodi Fort. . . .	Tinctura Iodi Fortis
Tr. Iodi Mit. . . .	Tinctura Iodi Mitis
Tr. Jalap. . . .	Tinctura Jalapæ
Tr. Jalap. Co. . . .	Tinctura Jalapæ Composita
Tr. Kalad. . . .	Tinctura Kaladanæ
Tr. Kino	Tinctura Kino
Tr. Kramer	Tinctura Krameriaæ
Tr. Lavand. Co. . . .	Tinctura Lavandulæ Composita
Tr. Limon. . . .	Tinctura Limonis
Tr. Lobel. Æth. . . .	Tinctura Lobeliaæ Ætherea
Tr. Myrrh. . . .	Tinctura Myrrhæ
Tr. Nuc. Vom. . . .	Tinctura Nucis Vomicaæ
Tr. Oliver. Cort. . . .	Tinctura Oliveri Corticis
Tr. Opii	Tinctura Opii
Tr. Opii Ammon. . . .	Tinctura Opii Ammoniata
Tr. Picrorh. . . .	Tinctura Picrorhizæ
Tr. Podoph. . . .	Tinctura Podophylli
Tr. Podoph. Ind. . . .	Tinctura Podophylli Indici
Tr. Prun. Virgin. . . .	Tinctura Pruni Virginianaæ
Tr. Pyreth. . . .	Tinctura Pyrethri
Tr. Quass. . . .	Tinctura Quassiaæ
Tr. Quill. . . .	Tinctura Quillaiaæ
Tr. Quin. . . .	Tinctura Quininaæ
Tr. Quin. Ammon. . . .	Tinctura Quininaæ Ammoniata
Tr. Rhei Co. . . .	Tinctura Rhei Composita
Tr. Scill. . . .	Tinctura Scillaæ

DATE	PLACE	REMARKS
1840	London	Arrived
1841	London	Departed
1842	London	Arrived
1843	London	Departed
1844	London	Arrived
1845	London	Departed
1846	London	Arrived
1847	London	Departed
1848	London	Arrived
1849	London	Departed
1850	London	Arrived
1851	London	Departed
1852	London	Arrived
1853	London	Departed
1854	London	Arrived
1855	London	Departed
1856	London	Arrived
1857	London	Departed
1858	London	Arrived
1859	London	Departed
1860	London	Arrived
1861	London	Departed
1862	London	Arrived
1863	London	Departed
1864	London	Arrived
1865	London	Departed
1866	London	Arrived
1867	London	Departed
1868	London	Arrived
1869	London	Departed
1870	London	Arrived
1871	London	Departed
1872	London	Arrived
1873	London	Departed
1874	London	Arrived
1875	London	Departed
1876	London	Arrived
1877	London	Departed
1878	London	Arrived
1879	London	Departed
1880	London	Arrived
1881	London	Departed
1882	London	Arrived
1883	London	Departed
1884	London	Arrived
1885	London	Departed
1886	London	Arrived
1887	London	Departed
1888	London	Arrived
1889	London	Departed
1890	London	Arrived
1891	London	Departed
1892	London	Arrived
1893	London	Departed
1894	London	Arrived
1895	London	Departed
1896	London	Arrived
1897	London	Departed
1898	London	Arrived
1899	London	Departed
1900	London	Arrived

Abbreviated Latin Name.	Full Latin Name.
Tr. Seneg. . . .	Tinctura Senegæ
Tr. Senn. Co.. . .	Tinctura Sennæ Composita
Tr. Serpent. . . .	Tinctura Serpentariæ
Tr. Stramon. . . .	Tinctura Stramonii
Tr. Strophanth. . . .	Tinctura Strophanthi
Tr. Tolut. . . .	Tinctura Tolutana
Tr. Urgin. . . .	Tinctura Urginæ
Tr. Valer. Ammon. . .	Tinctura Valerianæ Ammoniata
Tr. Valer. Ind. Ammon. .	Tinctura Valerianæ Indicæ Ammoniata
Tr. Zingib. . . .	Tinctura Zingiberis
Trag. . . .	Tragacantha
Troch. Acid. Benz. . .	Trochiscus Acidi Benzoici
Troch. Acid. Carbol. . .	Trochiscus Acidi Carbolici
Troch. Acid Tann. . .	Trochiscus Acidi Tannici
Troch. Bism. Co. . .	Trochiscus Bismuthi Compositus
Troch. Catech. . . .	Trochiscus Catechu
Troch. Ferr. Redact. . .	Trochiscus Ferri Redacti
Troch. Guaiac. Res. . .	Trochiscus Guaiaci Resinæ
Troch. Ipecac. . . .	Trochiscus Ipecacuanhæ
Troch. Kino Eucalyp. . .	Trochiscus Kino Eucalypti
Troch. Kramer. . . .	Trochiscus Kramerie
Troch. Kramer. et Cocain. .	Trochiscus Kramerie et Cocainæ
Troch. Morph. . . .	Trochiscus Morphinæ
Troch. Morph. et Ipecac. .	Trochiscus Morphinæ et Ipecacuanhæ
Troch. Pot. Chlorat. . .	Trochiscus Potassii Chloratis
Troch. Santonin. . . .	Trochiscus Santonini
Troch. Sulphur. . . .	Trochiscus Sulphuris
Turpeth. . . .	Turpethum
Ung. Acid. Bor. . . .	Unguentum Acidi Borici
Ung. Acid. Carbol. . .	Unguentum Acidi Carbolici
Ung. Acid. Salicyl. . .	Unguentum Acidi Salicylici
Ung. Aconitin. . . .	Unguentum Aconitinæ
Ung. Aq. Ros. . . .	Unguentum Aquæ Rosæ
Ung. Atrop. . . .	Unguentum Atropinæ
Ung. Bellad. . . .	Unguentum Belladonnæ
Ung. Cantharidin. . .	Unguentum Cantharidini
Ung. Capsic. . . .	Unguentum Capsici
Ung. Cetac. . . .	Unguentum Cetacei
Ung. Chaulmoog. . .	Unguentum Chaulmoogræ
Ung. Chrysarob. . . .	Unguentum Chrysarobini

100

Abbreviated Latin Name.	Full Latin Name.
Ung. Cocain. . . .	Unguentum Cocainæ
Ung. Creosot. . . .	Unguentum Creosoti
Ung. Eucalyp. . . .	Unguentum Eucalypti
Ung. Gall.	Unguentum Gallæ
Ung. Gall. c. Opio . . .	Unguentum Gallæ cum Opio
Ung. Hamam.	Unguentum Hamamelidis
Ung. Hydrarg.	Unguentum Hydrargyri
Ung. Hydrarg. Ammon. .	Unguentum Hydrargyri Ammoni- ati
Ung. Hydrarg. Co. . . .	Unguentum Hydrargyri Composi- tum
Ung. Hydrarg. Iod. Rubr.	Unguentum Hydrargyri Iodidi Rubri
Ung. Hydrarg. Nit. . . .	Unguentum Hydrargyri Nitratis
Ung. Hydrarg. Nit. Dil. .	Unguentum Hydrargyri Nitratis Dilutum
Ung. Hydrarg. Oleat. . .	Unguentum Hydrargyri Oleatis
Ung. Hydrarg. Oxid. Flav.	Unguentum Hydrargyri Oxidi Flavi
Ung. Hydrarg. Oxid. Rubr.	Unguentum Hydrargyri Oxidi Rubri
Ung. Hydrarg. Subchlor.	Unguentum Hydrargyri Subchlor- idi
Ung. Iodi	Unguentum Iodi
Ung. Iodof.	Unguentum Iodoformi
Ung. Lanæ Co.	Unguentum Lanæ Compositum
Ung. Myrobal.	Unguentum Myrobalani
Ung. Myrobal. c. Opio . .	Unguentum Myrobalani cum Opio
Ung. Paraff.	Unguentum Paraffini
Ung. Pic. Liq.	Unguentum Picis Liquidæ
Ung. Plumb. Iod.	Unguentum Plumbi Iodidi
Ung. Plumb. Subacetat . .	Unguentum Plumbi Subacetatis
Ung. Pot. Iod.	Unguentum Potassii Iodidi
Ung. Res.	Unguentum Resinæ
Ung. Staphisag.	Unguentum Staphisagriæ
Ung. Sulphur.	Unguentum Sulphuris
Ung. Zinc.	Unguentum Zinci
Ung. Zinc. Oleat.	Unguentum Zinci Oleatis
Urgin.	Urginea
Uv. Urs. Fol.	Uvæ Ursi Folia
Valer. Ind. Rhiz.	Valerianæ Indicæ Rhizoma
Valer. Rhiz.	Valerianæ Rhizoma

Abbreviated Latin Name.	Full Latin Name.
Viburn.	Viburnum
Vin. Antim. . . .	Vinum Antimoniale
Vin. Aurant. . . .	Vinum Aurantii
Vin. Colch.	Vinum Colehici
Vin. Ferr.	Vinum Ferri
Vin. Ferr. Cit. . . .	Vinum Ferri Citratis
Vin. Ipecac.	Vinum Ipecacuanhæ
Vin. Quin.	Vinum Quininæ
Vin. Xeric.	Vinum Xericum
Zinc. Acet.	Zinci Acetas
Zinc. Carb.	Zinci Carbonas
Zinc. Chlor.	Zinci Chloridum
Zinc. Oleost.	Zinci Oleostearas
Zinc. Oxid.	Zinci Oxidum
Zinc. Sulph.	Zinci Sulphas
Zinc. Valer.	Zinci Valerianas
Zingib.	Zingiber

